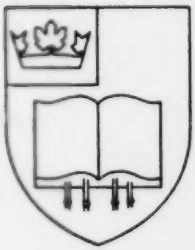
Proceedings of the

Royal Society of Canada

Délibérations de la

Société royale du Canada



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Proceedings of the Royal Society of Canada
Délibérations de la Société royale du Canada
1988

DIGBY J. McLAREN

President of the Royal Society of Canada 1987-1990
Président de la Société royale du Canada 1987-1990

THE ROYAL SOCIETY OF CANADA

The Royal Society of Canada is a national academy whose object is the promotion of learning and research in the arts and sciences. It was founded in 1882 by the Governor General of Canada, The Right Honourable the Marquess of Lorne, and is incorporated by an Act of the Parliament of Canada of 1883.

It is organized into three Academies:

Académie I: L'Académie des lettres et des sciences humaines de la Société royale du Canada

Academy II: Academy of Humanities and Social Sciences of the Royal Society of Canada

Academy III: Academy of Science of the Royal Society of Canada

To fulfil its object it:

- elects distinguished scholars to its membership;
- awards medals and prizes for excellence in learning and research in the arts and sciences;
- organizes an annual meeting at which papers are presented on all aspects of learning and research, and which usually includes a symposium on a topic of concern to all three academies of the Society;
- publishes *Transactions*, *Proceedings* and *Calendar* annually, a Newsletter, *Diversa*, semiannually;
- organizes regional, national, and international symposia on topics of current interest and importance, usually with strong participation from several disciplines;
- publishes the proceedings of symposia when it is appropriate;
- undertakes national and international projects of various kinds for the advancement of learning and research.

LA SOCIETE ROYALE DU CANADA

La Société royale du Canada est une académie nationale qui a pour objet de contribuer au développement du savoir et de la recherche dans les arts et les sciences. Fondée en 1882 par le Gouverneur du Canada, le très honorable marquis de Lorne, elle a été constituée par loi du Parlement canadien en 1883.

La Société comprend trois académies:

Académie I: L'Académie des Lettres et des Sciences humaines de la Société royale du Canada

Academy II: Academy of Humanities and Social Sciences of the Royal Society of Canada

Académie III: L'Académie des sciences de la Société royale du Canada.

Les objectifs de la Société sont:

- l'admission par voie d'élection d'auteurs distingués;
- l'attribution de médailles et de prix pour récompenser le haut savoir et la recherche dans les arts et les sciences;
- la tenue de réunions annuelles où l'on présente des communications traitant de tous les aspects du savoir et de la recherche, et qui comprennent habituellement un colloque sur un sujet apte à intéresser les trois académies de la Société;
- la publication chaque année des *Mémoires*, des *Délibérations* et de *l'Annuaire* ainsi que de *Diversa* deux fois par an;
- la tenue de colloques internationaux, nationaux et régionaux sur les sujets d'actualité importants, ordinairement à caractère interdisciplinaire;
- la publication des comptes rendus de colloques d'intérêt général;
- divers projets d'ordre national et international visant à encourager le savoir et la recherche.

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Proceedings/Délibérations

The Royal Society of Canada
La Société royale du Canada

FOUNDER/FONDATEUR: HIS GRACE THE DUKE OF ARGYLL, K.T., etc. *(when Governor General of Canada in 1882) (lorsqu'il fut Gouverneur général du Canada en 1882)*

PATRON: HER EXCELLENCY THE RIGHT HONOURABLE JEANNE SAUVÉ, P.C., C.C., C.M.M., C.D., GOVERNOR GENERAL OF CANADA
PRESIDENTE D'HONNEUR: SON EXCELLENCE LA TRÈS HONORABLE JEANNE SAUVÉ, C.P., C.C., C.M.M., C.D., GOUVERNEUR GÉNÉRAL DU CANADA

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OFFICERS OF ACADEMIES 1988-89
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Académie I: L'Académie des lettres et des sciences humaines
Président: Naïm Kattan, O.C.
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Secrétaire: Jeanne Demers, M.A., D.Litt.

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President: Jean A. Laponce, Dipl.Inst.Sc.Pol., Ph.D.
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Secretary: Anthony H. Richmond, B.Sc.(Econ), M.A., Ph.D.

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Secretary/Secrétaire: W.B. Kendrick, Ph.D., D.Sc.

MEMBERS OF COUNCIL 1988-89
MEMBRES DU CONSEIL 1988-89

The Council of the Society consists of the aforementioned officers of the Society and of the Academies, together with the following members:

Le Conseil de la Société se compose des membres du bureau de la Société et des Académies ainsi que des membres dont les noms suivent:

Honorary Editor/Directeur des publications: John M. Robson, B.A., M.A., Ph.D.
Honorary Librarian-Archivist/Bibliothécaire-archiviste: Guy Sylvestre, O.C., L.Ph., M.A., D.Litt., D. Bibl.
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Symposia Chairman/Président de colloques: J.A. Leith, B.A., M.A. Ph.D.
Awards Chairman/Président de médailles: Denis M. Shaw, B.Sc., M.Sc., Ph.D.

Additional members/Membres additionnels:

G.M. Bancroft, B.A., Ph.D.
D.F. Mettrick, Ph.D., D.Sc., F.R.S.A.
L.A. Myzak, M.Sc., A.M., Ph.D.

COMMITTEES AND FELLOWS 1988-89
COMITÉS ET MEMBRES 1988-89

Members of committees of the Society and of the Academies are listed in the 1988-1989 *Calendar*/Les noms des membres des comités de la Société et des Académies paraissent dans la brochure intitulée *Annuaire*, 1988-1989.

The list of Fellows will be found in the *Calendar*/La liste des membres paraît dans *l'Annuaire*.

Report of the Honorary Secretary for the Year

1987-1988

COUNCIL ACTIVITIES

The Council met four times and the Executive seven times. An account of the year's business including the audited financial statement is given in the Report of Council which was distributed to all Fellows.

The academies reported the elections of sixty persons. The names, categories and citations of the Fellows elected are given in the report of the Annual Meeting below.

The Society awarded the Flavelle Medal to Robert H. Haynes; the Thomas W. Eadie Medal to Arthur A. Axelrad; the McLaughlin Medal to Adolfo J. de Bold; the Rutherford Medal in Chemistry to Raymond J. Andersen; the Rutherford Medal in Physics to Claude Leroy and the Tyrrell Medal to Michael Bliss. The citations appear on pages 34-36.

The Society received 9 applications for the NATO Research Fellowship which were dispatched to Brussells. Faye Nella Schmidt was selected.

The Sir Arthur Sims Scholarship has been extended to the present incumbent Simon Paul MacKenzie of the University of Toronto. The scholarship will be offered in September 1988 for academic years 1989-90 and 1990-91.

ANNUAL MEETING

The Annual Meeting was held on 5 to 8 June 1988 in Windsor, Ontario, where the Society was received by the University of Windsor. Those present were:

ACADÉMIE I

Bélanger, Gérard; Beugnot, Bernard; Denis, Paul-Yves; Dion, Gérard; Gagnon, François-Marc; Gaudry Marc; Guindon, Hubert; Kattan, Naïm; Légaré, Jacques; Morel, André; Robin, Régine; Wallot, Jean-Pierre.

ACADEMY II

Aberle, David; Atwood, Margaret; Bercuson, David J.; Birch, Anthony; Bliss, Michael; Friedland, Martin; Gough, Kathleen; Grayson, A. Kirk; Green, Leslie; Gulsoy, Joseph; Gunn, J.A.W.; Jarvie, Ian C.; Krótki, K.J.; Labarge, Margaret; Laidler, David; Lambert, Richard; Laponce, J.A.; Mallory, James; Marchak, Patricia; McConica, James; McMaster, Juliet; Meisel, John; Nelles, V.; Raftis, Ambrose; Richmond, Anthony H.; Rosenbluth, Gideon; Ross, Ian; Russell, Peter; Scott, A.D.; Smiley, Donald; Suedfeld, Peter; Winch, David; Waddams, Stephen; Wevers, John; Wittlin, Curt; Zaslow, Morris.

ACADEMY/ACADÉMIE III

Armstrong, D.; Axelrad, A.; Barnes, C.R.; Bates, D.V.; Batten, Alan; Beveridge, James; Brockhouse, B.; Buck, Carol; Burton, Ian; Bushuk, Walter; Buyers, W.J.L.; Cantin, Marc; Carroll, Kenneth; Cherry, John; Cizek, Jiri; Costain, Cecil; Cynader, Max; Derry, Douglas; Donaldson, Edward; Eales, Geoffrey; Friedlander, John; Goresky, Mark; Graham, William; Griller, David; Gussow, William; Hare, F. Kenneth; Haynes, Robert; Hurst, Donald G.; Hume, J.N. Patterson; Kane, Richard; Kendrick, Bryce; Kuksis, Arnis; Lederis, K.; Legendre, Louis; Lindseth, R.O.; Locke, Jack L.; Longhurst, Alan; Macleod, Robert; McCulloch, E.A.; McLaren, D.J.; Mogenson, Gordon; Murray, R.G.E.; Mysak, Lawrence; Naimark, Arnold; Paar, Jim; Perkins, Edwin; Peters, Ernest; Peter, Richard; Ramsay, Donald; Robinson, Gilbert B. de B.; Rochester, Michael; Rowe, David J.; Runnalls, O.J.C.; Salter, Robert; Scott, Steven; Shaw, Denis M.; Shaw, E.A.G.; Thompson, John E.; Veale, W.L.; Whyte, Anne.

GENERAL MEETING

The General Meeting was held at 8:00 pm on Sunday, 5 June, 1988, in the Chapel of Assumption University of the University of Windsor.

Dr. Ronald Ianni, President and Vice-Chancellor of the University, welcomed the Fellows and their guests. The President of the Society thanked Dr. Ianni, after which he invited the Presidents of the three Academies to introduce the new Fellows whose citations appear below.

ACADÉMIE I

ANDRE-J. BÉLANGER, professeur titulaire du Département de science politique, à l'Université de Montréal, est un spécialiste des idéologies et de la théorie politique. Il est l'auteur de trois importants ouvrages: *L'apolitisme des idéologies québécoises, le grand tournant de 1934-36; Ruptures et constantes: Quatre idéologies du Québec en éclatement: La Relève, la J.E.C., Cité Libre, Parti Pris*; et plus récemment *Framework for a Political Sociology*. Cet ouvrage de théorie économique a reçu des recensions très favorables dans des revues internationales. Professeur invité dans plusieurs universités canadiennes, André-J. Bélanger s'impose avec des travaux d'un caractère fondamental et par un examen minutieux des questions.

BERNARD BEUGNOT, professeur titulaire du Département d'études françaises à l'Université de Montréal, est spécialiste de la littérature française du XVIIe siècle. Il a publié plusieurs ouvrages: une bibliographie de Guez de Balzac, en essai intitulé *L'entretien au XVIIe siècle*, une édition critique en deux volumes des *Entretiens* de Guez de Balzac, qui lui a valu le prix Halphen de l'Académie française, *Boileau, Visages anciens, visages nouveaux*. Bernard Beugnot s'est aussi intéressé à la littérature française contemporaine et a publié Jean Anouilh. Il a aussi publié plus de soixante-dix articles dans une trentaine de revues.

KENNETH GILBERT, professeur à la pige dans plusieurs universités, conservatoires et académies en Europe et au Canada, Montréalais, Kenneth Gilbert devint en octobre 1981 titulaire de la classe de clavecin à la Hochschule de Stuttgart en même temps qu'il prend la direction du Département de musique ancienne au Conservatoire de Strasbourg. Il y a quelques mois, il a été nommé professeur de clavecin au Mozarteum de Salzbourg. Ses travaux de musicologie ont donné des éditions très recherchées de l'oeuvre de clavecin de Couperin, Rameau, d'Anglebert, Frescobaldi, l'oeuvre d'orgue de Couperin, les Variations Goldberg de Bach, ainsi que la monumentale édition de toutes les sonates de Scarlatti, ouvrage sélectionné par le Comité pour l'Année européenne de la

Musique, en 1985. De par ses diverses activités professionnelles et pédagogiques au service de la musique ancienne, Kenneth Gilbert a exercé une influence considérable sur la jeune génération des clavecinistes, tant en Europe qu'en Amérique.

ALAIN HAURIE, professeur titulaire à l'Ecole des Hautes Etudes Commerciales de Montréal, s'est efforcé d'introduire une nouvelle dimension à la formation des administrateurs. Par son enseignement et ses recherches - qui sont la source de plus d'une centaine de publications scientifiques - il a persuadé ses collègues et étudiants de l'important rôle des méthodes quantitatives dans la préparation des décisions. Co-auteur de deux livres, il est aussi le fondateur de Groupe d'Etudes et de Recherches en Analyse des Décisions. Le travail inlassable d'Alain Haurie le place parmi ceux qui ont fait progresser les sciences de la gestion et contribué à l'étude de problèmes importants principalement dans les secteur de l'énergie et de la santé.

CHARLES LE BLANC, professeur titulaire et Directeur du Centre d'Etudes de l'Asie de l'Est à Université de Montréal, est spécialiste de la philosophie chinoise classique, et est l'auteur de nombreuses publications sur la culture et la philosophie chinoise. Outre des articles spécialisés, il a publié trois ouvrages importants: l'édition des *Essays on Chinese Civilization* de Derk Bodde, une monographie intitulée *Huai-nan Tzu. Philosophical Synthesis in Early Han Thought* et le collectif *Chinese Ideas about Nature and Society*. Charles Le Blanc prépare présentement, avec un groupe de spécialistes canadiens et français qu'il dirige, un ouvrage considérable sur la philosophie chinoise traditionnelle.

FRANCO LEPORE, professeur titulaire au Département de Psychologie à l'Université de Montréal, est un des scientifiques les plus reconnus dans son domaine de spécialisation, soit les mécanismes cérébraux de la perception visuelle et de la communication interhémisphérique. Ses travaux lui ont valu une réputation internationale avec une soixantaine de publications dans des revues internationales. Il a co-édité un ouvrage sur les fonctions calleuses qui est devenu un classique. Il a pu montrer avec ses collaborateurs que l'hypothèse de la plasticité cérébrale était aussi applicable au système calleux. Franco Lepore a eu une influence considérable sur le développement de la psychologie au Québec, non seulement dans son domaine de spécialisation (la neuroscience) où il a contribué à la formation de chercheurs de plus en plus réputés, mais aussi dans les autres secteurs de recherche relevant de la psychologie scientifique.

JACQUES MATHIEU, professeur titulaire d'histoire à l'Université Laval, fait des recherches en histoire économique et sociale du Québec et de la Nouvelle-France. Il a publié cinq livres, a collaboré à la publication de six autres, a contribué à onze ouvrages collectifs et fait paraître une vingtaine d'articles dans des revues scientifiques. Ses travaux d'excellente qualité lui ont mérité les prix suivants. En 1981, Jacques Mathieu fut le co-récipiendaire du Waldo Gifford Leland Prize attribué par la Society of American Archivist pour une contribution remarquable dans le domainde de l'histoire archivistique. L'année suivante, pour son livre *Le commerce entre la Nouvelle-France et les Antilles au XVIIIe siècle*, il recevait le prix Lionel-Groulx attribué par l'institut d'histoire de l'Amérique française.

JEAN-JACQUES NATTIEZ, professeur titulaire à la Faculté de Musique de l'Université de Montréal, a développé des recherches de pointe en sémiologie musicale. Parmi ses nombreuses publications, il y a plusieurs volumes dont les titres suivants: *Fondements d'une sémiologie de la musique* (1975); *Tétralogie Wagner, Boulez, Chéreau* (1983); *Proust musicien* (1984); *Musicologie générale et sémiologie* (1987) et *De la sémiologie à la musique* (1987). Jean-Jacques Nattiez a remporté le Grand Prix International du Disque d'abord pour son enregistrement des jeux de gorge des Inuits, puis pour sa réédition de la Collection universelle de Musique populaire. Il partage avec Pierre Boulez la direction de la collection "Musique/passé/présent" aux Editions Christian Bourgois à Paris.

RÉGINE ROBIN, professeure de sociologie de la littérature à l'Université du Québec à Montréal, agrégée d'histoire, a une soixantaine de publications en linguistique, en analyse des discours, en théorie littéraire et, récemment en soviétologie. Son ouvrage le plus récent, *Le Réalisme socialisme: une esthétique impossible*, lui a value Prix du Gouverneur général 1987. Son livre *Histoire et linguistique* a été traduit en portugais. Régine Robin est aussi la romancière du *Cheval blanc de Lénine* et de la *Québécoise*. Elle domine plusieurs disciplines en une oeuvre qui allie l'originalité à la force de synthèse.

ROBERT SEVIGNY, professeur titulaire de sociologie à l'Université de Montréal, est Maître en psychologie de l'Université de Montréal et docteur en sociologie de l'Université Laval. Par ses recherches, son enseignement, ses écrits et ses interventions cliniques en dynamique de groupe et dans l'analyse du social, Robert Sévigny occupe une place d'autorité en psychologie sociale et en sociologie. La publication de *Devenir sociologue, Le Québec en héritage, L'internation en santé mentale, Santé mentale et processus sociaux* montre que ses préoccupations se situent à la rencontre de l'individuel et du collectif et l'amène à traiter de

l'actualisation de soi et de l'aliénation puis à utiliser la santé mentale et son traitement comme révélateurs des institutions de notre société.

ACADEMY II

JOHN M. BEATTIE, Department of History and Centre of Criminology, University of Toronto, is an internationally recognized scholar in the field of eighteenth-century social, constitutional and legal history. His monumental study, *Crime and the Courts 1660-1800*, has established him as a pre-eminent scholar of the history of English crime and punishment. He has pioneered a field, presented new and challenging hypotheses, and elaborated innovative methods of the study of legal records.

DAVID J. BERCUSON is at the Department of History, University of Calgary. His work consists of four major books, some thirty scholarly articles, and numerous other contributions to books, conferences, and symposia. He is recognized as a leading historian of modern Canada, a prolific writer with extraordinarily wide-ranging interests. His books establish him as the Canadian authority on such disparate events as the Winnipeg general strike of 1919 and Canadian policy regarding the founding of Israel.

ANTHONY H. BIRCH, Department of Political Science, University of Victoria, is among the foremost students of national and local governments, especially those of the United Kingdom. How can a political system remain representative yet avoid the paralysis resulting from overload? The answer to this and many other related questions are provided in many books and articles that stand out by the thoroughness of the evidence and the clarity of the presentation.

DAVID A. CAMPBELL, Department of Classics, University of Victoria, is internationally acknowledged as a leading authority on ancient Greek Lyric Poetry. His achievements as an editor and commentator, and as a textual critic and translator are well established. His abilities as a literary critic and philologist have also been shown by his many articles and by his book, *The Golden Lyre: The Themes of the Greek Lyric Poets* (London, 1983).

E. KATHLEEN GOUGH, Department of Anthropology and Sociology, University of British Columbia, has combined distinguished scholarship with a commitment to the social relevance of her discipline. In addition to her definitive work on matrilineal kinship, her solution to the Nayar marriage problem is a major component in the anthropological theory of marriage.

JOHN HAGAN is at the Department of Sociology and the Faculty of Law, University of Toronto. The author of five books, the title that best distinguishes his work is *The Disreputable Pleasures: Crime and Deviance in Canada* (1977, 1984), one of the most widely read books in this field. His work is highly original and extensively cited for the ways in which it brings the concepts of power and social structure to the study of social control.

HENRY S. HARRIS, Department of Philosophy, Glendon College, York University, is the foremost Canadian specialist on the philosophy of Hegel as well as an expert on the writings of Giovanni Gentile and Benedotto Croce. The author, editor, and translator of numerous books and articles, he is a fine scholar who infuses his writings and teaching with full richness of the humanist tradition.

RICHARD HARRIS, Department of Economics, Queen's University, is one of the most talented and creative economists of his generation. He is recognized internationally for his theoretical and empirical work on computer-based general equilibrium models and his many important publications on industrial organization, optimal taxation, and cost-benefit analysis. His research on trade, industrial policy, and international competition has become a reference point in the Canadian debate on free trade.

PETER W. HOGG, Osgoode Law School, York University, is an outstanding scholar and teacher of national and international repute, who has contributed in a unique way to the development and understanding of the Canadian Constitution, especially the Charter of Rights. In his numerous writings he has presented new approaches to the law that have influenced the attitudes of the courts in Canada and Australia.

MICHAEL H. KATER, Department of History, Atkinson College, York University, is the leading Canadian historian of Weimar and Nazi Germany. His books and articles have poured forth, analyzing subjects as varied as Weimar student life, the SS, Nazi party membership, and doctors and the practice of medicine under Hitler. All his writing, in both

English and German, is marked by absolutely thorough research, carefully honed argument, and a complete mastery of the field.

LESLIE J. KING, Vice-President (Academic) and Professor of Geography, McMaster University, has a long and outstanding record of scholarly research and publication, journal editing, and professional leadership in urban and economic geography. He was a pioneer in introducing mathematical models to geography and a founding member of the interdisciplinary field of regional science. He has made major contributions in developing the theoretical underpinnings of economic geography, in quantitative modelling, central place theory, and the systematic analysis of fluctuations in economic activity across space and over time.

MARGARET W. LABARGE, Adjunct Professor of History, Carleton University, Ottawa, is one of the most widely-read (and readable) historians of medieval history in the world, as the multiple-publication and frequent reprinting of her books testifies. Her work has won her a wider audience than most academicians enjoy, but not at the expense of her scholarly reputation. Her new book on women in the middle ages promises to be another landmark.

KAI NEILSEN, Department of Philosophy, University of Calgary, has been and continues to be a prodigiously prolific contributor to contemporary philosophy, chiefly on ethics, political philosophy, and the philosophy of religion. He maintains an international reputation for proficiency and resourcefulness. He has attracted especially wide attention as an uncommonly substantial defender of egalitarianism.

DANIEL L. OVERMYER, Department of Asian Studies, University of British Columbia, is one of the leading scholars of the present day in the field of Chinese religion. His pioneering treatment of the religious element in popular Chinese sectarianism is used as a key to a better understanding of the thought and values of the lower orders in traditional Chinese society. He continues his research into sectarian literature and practice, contemporary as well as traditional, and into the links between popular ideology and the elite systems of Confucianism, Buddhism, and Taoism.

IAN S. ROSS, Department of English, University of British Columbia, a humane and versatile scholar, possesses a far-ranging knowledge of medieval, Renaissance, and Augustan Scottish literature. Initially junior editor of the *Correspondence* volume in Clarendon Press's edition of the works of Adam Smith, Ross later assumed complete responsibility for

the book. Subsequently he was one of the editors of *Essays on Philosophical Subjects* in the same edition.

PETER RUSSELL, Department of Political Science, University of Toronto, is widely recognized for his illuminating studies of the Supreme Court of Canada. The fruits of his research are continuing to enrich the study of the constitution and of judicial behaviour in Canada.

PETER SUEDFELD, Dean of Graduate Studies, University of British Columbia, is a major figure in Personality and Social Psychology. His five books and more than a hundred articles on restricted environmental stimulation research, sensory deprivation, behavioural medicine, and conceptual complexity have given him a world wide reputation as a leader in psychological research.

GEORGE SZANTO, Department of Communications, McGill University, has taught English, French, German, Comparative Literature, and Communications. His present work in its several forms is centred on narrative and cultural change. He is the author of three major critical books, a collection of short stories, *Sixteen Ways to Skin a Cat* (1978), and a novel, *Not Working* (1983); and has written nine produced plays of which four have been published.

STEPHEN M. WADDAMS, Faculty of Law, University of Toronto, is one of the leading legal scholars in the common law world. His wide interests encompass a great many fields of law, including contracts, torts, damages, criminal law, and legal history. His five books have been widely praised and widely used by academics, practitioners, and judges throughout the Commonwealth. His many reports on various aspects of law reform have made an equally important contribution to the development of the law.

CURT J. WITTLIN, Department of French and Spanish, University of Saskatchewan, a Romanist of rare capacity and well grounded in Classical languages, a linguist and philologist as well as a literary scholar, has made a very significant contribution to Romance Humanistic and Renaissance studies. His work on the most widely read and studied medieval Catalan author and social critic, Francesc Eiximenis, has been equally important.

ACADEMY/ACADÉMIE III

RAY BARTNIKAS, Maître de recherche, Institut de recherche d'Hydro-Québec, is known for sustained and substantial contributions to the science of electrical insulation as it bears on power engineering. His work has had a major impact on our understanding of coronas and dielectric losses in many solids, liquids and solid-liquid interfaces.

TERRANCE J. BEVERIDGE, Professsor of Microbiology, College of Biological Sciences, University of Guelph, is a bacteriologist with a primary interest in the structure of bacterial cells, who uses an interdisciplinary approach to apply his understanding to other biological problems. His fundamental observations on the macromolecular structure and assembly of protein-array layers on bacterial cell walls contribute to our understanding how cell structures are made and maintained. His studies of the uptake of metals by cell-wall components contribute materially to explaining the role of durable biopolymers in geochemical processes and ore body formation. His work stimulates new approaches to old problems. The Steacie Prize was awarded to him in 1984.

CAROL BUCK is Professor of Epidemiology, University of Western Ontario. Her work in epidemiology began thirty-five years ago and has received international recognition. She has served on numerous councils and Government committees in Canada and the United States, has been a member of the Science Council and a consultant to the Rockefeller Foundation. In 1978 the government of Australia invited her to report on the state of teaching and research in epidemiology in that country. Dr. Buck is an associate editor of the *American Journal of Epidemiology* and on the board of editors of the *International Journal of Epidemiology*. She has served a three-year term as President of the International Epidemiological Association and has travelled in Africa, South-East Asia, and Europe on their behalf.

W.J.L. BUYERS, Manager, Neutron and Solid State Physics Branch, Physics and Health Sciences, Atomic Energy of Canada Ltd., has made, primarily through the use of neutron scattering, extensive and crucial contributions, both theoretical and experimental, to our knowledge of the structure and the excitations of condensed matter, in particular of magnetic excitations in both ordered and disordered crystals. His work on solitons in CsCoC- and on magnetic properties of uranium compounds is especially noteworthy. He has made pioneering studies of phonon-phonon interactions, the structure of liquid neon, structural phase transitions in antifluorite crystals, and lithium intercalation in

layered compounds. He has also developed many innovative experimental techniques for both neutron scattering and positron annihilation.

MARC CANTIN, Directeur du groupe d'hypertension, Institut de Recherches Cliniques de Montréal, a été le premier à déterminer la nature protéique des granules de sécrétion contenues dans les oreillettes. Cette hormone appelée facteur natriurétique des oreillettes est un diurétique naturel très puissant qui sera important pour le traitement de la haute pression artérielle et des oedèmes.

JOHN A. CHERRY, Professor of Earth Sciences and Director of the Institute of Groundwater Research, University of Waterloo, has made significant contributions to the understanding of the hydrogeological, hydrodynamic, and geochemical aspects of contaminant transport in groundwater.

JIRI CIZEK is Professor at the Department of Applied Mathematics and the Department of Chemistry, University of Waterloo and the Centre for Graduate Work in Chemistry, Guelph-Waterloo. Following his early contributions to spherical diffusion and reaction kinetic problems of theoretical polarography, he devoted himself entirely to the application of quantum mechanics to atomic and molecular electronic structure. He made pioneering contributions to the many-electron correlation problem by developing the necessary formalism and deriving the explicit equations for the so-called coupled cluster approach which is now being widely exploited by many researchers. During the last decade he was very influential in the introduction of algebraic methods and large order perturbation theory into quantum chemistry. All his scientific endeavours greatly contributed to bridging the gap between applied mathematics and quantum chemistry.

COLIN W. CLARK is Professor of Mathematics at the University of British Columbia. His outstanding achievement has been his creation of the new field of "mathematical bio-economics". In this, problems of biology and economics are addressed using the mathematical concepts and methods of optimization and control theory. In studies of various marine animal populations and other renewable resources, Clark has shown that theories of resource exploitation which disregard the time variable, both biologically and economically, have major shortcomings. The appearance of Clark's four eloquently written books in this area, together with his many journal publications, have revolutionized the thinking of resource managers and the economics of fisheries management. It is a rare article in fisheries economics that does not cite his classic book, *Mathematical Bio-economics: The Optimal Management of Renewable Resources*.

MICHEL DAVID, Professeur titulaire du Département de génie minéral, Ecole polytechnique de Montréal, est reconnu internationalement pour l'originalité et l'importance de ses recherches appliquées en géostatistique. Comme ingénieur minier il a opérationalisé la théorie des variables régionalisées, développé de nouvelles approches pour l'analyse des variogrammes, amélioré les méthodes d'échantillonnage, et a été le champion mondial de l'application de la géostatistique à une grande variété de gîtes métallifères et non-métallifères. Il a publié le premier manuel de géostatistique appliquée et a été le premier à avoir développé un système complet d'analyse géostatistique sur ordinateur et sur micro-ordinateur. Il a été le pionnier de l'introduction de la géostatistique en mécanique des sols et en cartographie. Agé de quarante-deux ans, il est l'auteur de plus de 100 publications et il a été le principal levier de la formation spécialisée en géostatisque de 1500 professionnels, et il a enseigné la géostatistique sur tous les continents.

ADOLFO J. de BOLD, Professor of Pathology and Physiology, Faculty of Medicine, University of Ottawa, has shed great lustre on this country since he arrived in 1968 as a graduate student from Argentina. Within five years of receiving his Ph.D. from Queen's University he had succeeded in identifying and isolating specialized granules from specific locations within the heart musculature and a few years later showed that these contained a specific hormone, atrial natriuretic factor (ANF), a basic regulator of salt and water metabolism. In 1983 he reported the chemical sequence of this hormone which has now been synthesized and is undergoing extensive clinical trials. Dr. de Bold has been internationally recognized as the discoverer of this important new hormone.

EDWARD M. DONALDSON, Research Scientist in the West Vancouver Laboratory, Department of Fisheries and Oceans, studies reproduction, growth and genetics of fishes - particularly salmon. His research on reproductive hormones has contributed methods used to induce breeding and control the timing of egg production; his growth hormone studies show potential for the development of larger fish, while his genetic studies permit the production of populations of either males or females - an important advance for both the industry and fish culturists. Dr. Donaldson is active in fisheries research planning in Canada, and also in several developing countries through CIDA and the IDRC.

JOHN G. EALES is Professor of Zoology, University of Manitoba. For a quarter of a century, he has investigated the fate of fish thyroid hormone after it enters the circulation. His approach, in contrast to earlier studies that assumed fish thyroids work like those of mammals, enabled him to identify the liver as the site of enzymatic conversion of thyroxine to triiodothyronine, to compare receptor binding of thyroxine and this much more active product, and to identify agents that enhance or inhibit conversion. His current working hypothesis places fish thyroid hormone in a central position, as regulating somatic growth and gonadal development.

DEREK C. FORD, Professor of Geography, McMaster University, is recognized throughout the world for his scientific studies of caves, the processes leading to their formation, their role in the hydrological cycle, and the record of paleoclimate and geological history that is preserved in the sediments and deposits which they contain. Professor Ford has explored and mapped caves throughout the world, and, through his writings and teachings, has greatly advanced our appreciation of the special significance of these landforms in the recent history of the earth.

URSULA M. FRANKLIN, Professor, Metallurgy and Materials Science and Director of Collegium Archaeometricum, University of Toronto, is an applied scientist who has truly bridged and cemented the disciplines of materials science, archeology, and anthropology through her outstanding and insightful scholarly work. From a foundation laid in her earlier researches on the crystaline micro-structure of alloys and melts, which pioneered the use of microradiography, she has delved into the science of ancient materials including the remarkable Chinese bronzes, discerning from artifacts the early techniques of metal-working and ceramic firing. She is a principal authority on archeometry, sought out worldwide by research collaborators. She has fully supported in her extensive work and writings her view that such artifacts are equivalent to literary sources, capable of describing culture but needing to be read and evaluated by a variety of techniques based on modern materials science, and she has accomplished this as few others have. By many Canadians she is recognized as an eminent scholar who is an eloquent spokesperson for social concerns about burgeoning technology, for a conserver society, and for international peace.

JOHN FRIEDLANDER, Professor of Mathematics, University of Toronto, is the leading Canadian mathematician in analytic and elementary number theory. He has a well established international reputation for his work in sieve methods, exponential sums, and the distribution of prime numbers.

DAVID GRILLER, Research Officer, Division of Chemistry, National Research Council of Canada, is distinguished for his outstanding researches on reactive chemical intermediates. He has determined structures, modes of reaction and thermodynamic properties of many short-lived chemical species. He has pioneered in the development of concepts and methods that have been avidly adopted by other chemical research workers. Dr. Griller's work has laid the foundation for the development of several new synthetic methods, and he has tamed highly reactive species using molecular shielding to protect their active sites. His research on reactive intermediates has been both diverse and profound and continues to have a major impact in all areas of chemistry.

STEPHEN HANESSIAN, Professor of Chemistry, University of Montreal, has made splendid contributions to synthetic organic chemistry. He has been a pioneer in the investigation of the utility of carbo-hydrates and other chiral molecules in the synthesis of natural products. The concept of "chiral templates" which he developed, and which has since been used by many research groups, has been applied ingeniously by Hanessian in the partial or complete synthesis of such challenging targets as spectinomycin.

RICHARD KANE, Professor of Mathematics, University of Western Ontario, is one of the leading experts in the important area of algebraic topology which studies Hopf spaces. The major achievement in this subject, which originates with work of Heinz Hopf over fifty years ago, is the cohomological classification of finite Hopf spaces. This classification is largely due to J.P. Lin and to Professor Kane, and culminates in their proof of the Loopspace Conjecture, which is the most impressive piece of work in the subject. Undoubtedly the major work in this area is Kane's recent book in which he recounts the details of this classification - a major triumph of modern mathematics and the subject of numerous articles and research papers by Kane over the past decade. The techniques which Kane introduced during this work have found plentiful use in other areas of algebraic topology.

ARNIS KUKSIS, Professor in the Banting and Best Department of Medical Research, C.H. Best Institute, University of Toronto, has developed methods of lipid analysis that have led to world-wide recognition as a leader in this field, and have enabled him to make important discoveries in human and animal metabolism with special reference to the understanding and treatment of disorders of lipid metabolism including atherosclerosis. He has been an invited lecturer at international meetings on thirty occasions. He has published over two hundred twenty articles and forty-eight major reviews. He has also edited three books and a two-volume treatise on fat absorption for CRC Press.

LOUIS LEGENDRE est Professeur titulaire au Département de biologie à l'Université Laval. Océanographe spécialiste de la production biologique des plataux continentaux, le professeur Legendre, bien qu'encore jeune, s'est déjà acquis une renommée internationale; sa participation à de nombreux comités au Canada et à l'étranger en fait foi. Plus encore, faut-il souligner sa collaboration importante à plusieurs missions scientifiques tant en Amérique qu'en Europe, en Afrique et en Extrême-orient. Sa production scientifique est soutenue, puisqu'il a déjà à son crédit cinquante-cinq publications avec jury d'examen ainsi que neuf livres et chapitres. Enfin on ne peut passer sous silence qu'il a été à l'origine de la formation et a contribué au développement de deux nouvelles disciplines scientifique: l'écologie numérique et l'océanographie dynamique.

ALAN R. LONGHURST, Research Scientist, Department of Fisheries and Oceans, Bedford Institute of Oceanography, is an oceanographer and fisheries scientist who has worked in many parts of the world and has made major contributions to our understanding of the effects of varying physical oceanographic conditions on biological communities. He developed new instrumentation with which to study the vertical fine structure of plankton communities in the water column and revolutionized the field by showing that vertical distribution patterns are at least as important as horizontal ones.

EDWIN PERKINS, Associate Professor, Department of Mathematics, University of British Columbia, has produced powerful and insightful work on a range of subjects at the heart of modern probability theory. He is perhaps best known for his early use of non-standard analysis to prove theorems which had defied more conventional techniques. This has led to a wide interest in the subject among probabilists. He has discovered results of outstanding depth and delicacy, which show underlying regularity in the seemingly irregular behaviour of Brownian motion. His recent work on measure-valued diffusions gives us a deeper understanding of these complex processes than we could have hoped for only a year ago.

ERNEST PETERS, Professor of Hydrometallurgy, Department of Metals and Materials Engineering, University of British Columbia, has made outstanding contributions in the application of fundamental sciences (thermodynamics, kinetics, solution chemistry, precipitation chemistry and electrochemistry) to hydrometallurgy processes.

ROBERT L. PETERSON, Professor of Botany, University of Guelph, has been one of Canada's leading plant anatomists and morphologists for many years. He has made important and internationally recognized contributions to our knowledge of many areas, including meristem organization and root cap structure, structure and function of the root endodermis, lateral root initiation and development, and colonization of roots by vascular-arbuscular mycorrhizae. The author of over ninety papers and several book chapters, he is a prolific and committed researcher. He has contributed extensively to the scientific community as a member and Chairman of NSERC panels, as a reviewer for journals and as Associate Editor of the *Canadian Journal of Botany*.

RICHARD P. PHARIS, Professor of Biology, University of Calgary, has made extensive contributions to research on flowering in forest trees and on the biosynthesis of gibberellins in developing plants. His pioneering studies on the precocious flowering of forest trees has permitted the forest industry to shorten considerably the time required for the breeding of improved forest species. His studies on the key role for gibberellins in controlling plant growth have led to several important original findings. Classes of gibberellins have now been delineated which are florigenic or non-florigenic. Dr. Pharis has also contributed widely to the scientific community in this country, serving on several national and provincial committees. His involvement with the Alberta Wilderness Association and Canadian Wildlife Federation have brought him wide recognition.

WLADIMIR SMIRNOFF, Chercheur scientifique, Centre de recherches forestières des Laurentides, Environnement Canada, et professeur agrégé à l'Université Laval, évoque dans les milieux scientifiques la lutte biologique aux insectes nuisibles à l'aide d'entomopathogènes et chez le public averti la lutte à la tordeuse des bourgeons de l'épinette à l'aide du B.T. (*Bacillus Thuringiensis)* épandu du haut des airs. En effet, ce chercheur et professeur s'est acquis depuis un grand nombre d'années une réputation internationale par ses travaux sur la biologie des virus et des microorganismes entomophages et particulièrement par ses études fondamentales sur le Bacillus Thuringiensis. Ses recherches l'ont ainsi conduit à étudier les réactions de ces microorganismes aux facteurs du milieu dans le but de trouver un moyen d'augmenter leur virulence. Le docteur Smirnoff a toujours cherché des applications pratiques à ses recherches les plus fondamentales, aussi peut-on le considérer comme l'un des premiers bio-technologistes au Canada.

YASUSHI TAKAHASHI, Professor of Physics, University of Alberta, is responsible for several fundamental contributions to the phenomenal postwar development of quantum field theory. His theory for relativistic wave equations and his covariant formulation of quantization of

canonical fields have become the basis for the present form of quantum field theory. The celebrated Ward-Takahashi identity, discovered by Takahashi in 1957, is fundamental in quantum field theory and applied in particle physics, solid state physics, and relativity. Takahashi's many important contributions since settling in Canada in 1968 include a field theoretical formulation of statistical mechanics ("thermo-field dynamics"), an analysis of quantum gauge fields, and a field theoretical formulation of crystal dislocation theory.

JACQUES VANIER, Director, Laboratory for Basic Standards, Division of Physics, National Research Council, has made important contributions in the research and development of rubidium masers, hydrogen masers, and cesium standards. Most of his publications include both theoretical studies and experimental results. The explanation of experimental results, and the understanding of the basic physics of various devices, have led to further experimental tests and innovations. This balanced and continuous interplay is characteristic of Jacques Vanier's research, and its excellence earned him a worldwide reputation as a leader in the field of atomic standards, and led to his appointment in 1983 as a Principal Research Officer at NRC.

WARREN VEALE is Professor and Head of Medical Physiology, Faculty of Medicine, University of Calgary. His research interests are on the brain regulation of body temperature in mammals. Recently, in research on experimental animals, he found that the brain uses the peptide arginine vasopressin to moderate the height of fever; in essence, one area of the brain secretes vasopressin into another area, the septal region, to regulate the fever. Dr. Veale's research also explains the basis for convulsions during high fever; high levels of vasopressin in the brain sensitize it to a second bout of high vasopressin levels which in turn triggers the convulsions. Dr. Veale's exciting discoveries have provided us with many new ideas on how body temperature in mammals, including man, is regulated during health and disease.

W. MURRAY WONHAM, Professor of Electrical Engineering, University of Toronto, has made fundamental contributions to the field of control systems theory and automation in a number of distinct areas. He has pioneered the geometric approach to linear multivariable control systems, and made fundamental contributions to the understanding of the "pole-shifting" theorem, and the "separation principle" of stochastic control. More recently he has been studying the fundamental properties of discrete event systems.

OTHER MEETINGS

Society and Academy Committees met at business meetings from 5 to 8 June.

A general symposium on "Future Changes and Challenges to Canadian Water Resources" was held on Monday, 6 June. The Academies held symposia and heard separate papers. The program of conferences appears as an appendix: Order of Proceedings for the Annual Meeting. Selected papers will appear in the *Transactions*.

On Tuesday evening, Fellows and guests attended a reception in the Vanier Hall at the University of Windsor which was followed by the annual dinner. The honoured guests were Dr. Howard McCurdy, M.P. for Windsor-Walkerville, and Mrs. McCurdy; Dr. Richard Rohmer, the Chancellor, and Mrs. Rohmer; Dr. Ron Ianni, the President, and Mrs. Ianni. The President of the Royal Society of Canada presented to the laureates the Awards of the Society for 1988.

ANNUAL BUSINESS MEETING

The Annual Business Meeting was held in the Essex Theatre of the University of Windsor at 15h00 on Tuesday, 7 June, 1988. Fifty-two Fellows were present.

The President, Digby J. McLaren, welcomed the members and called this 106th meeting to order.

MOVED *by Dr. John Wm. Wevers, seconded by Dr. C. Barnes that the minutes of the 1987 Annual Business Meeting be approved as presented in the Proceedings, Fifth Series, Volume II, 1987.* CARRIED

The minutes of the last meeting have been reviewed by the Executive and Council and all business arising will be dealt with within the agenda.

REPORTS/RAPPORTS

Representatives of each Academy presented brief reports of their academies.

Académie I: Le Président, M. Naïm Kattan, rapporte que l'assemblée générale de l'Académie a eu lieu le lundi, 6 juin 1988 midi. Pour l'année 1988-89, le Conseil de l'Académie sera composé de son bureau: M. Naïm Kattan, président; M. Gilles Paquet, vice-président; Mme Jeanne Demers, secrétaire; M. Jean-Pierre Wallot, ancien président, ainsi que

Gérald Beaudoin, Andrée Désilets, François Duchesneau, Louis Sabourin, Maurice Lebel, Jacques Légaré, Guy Sylvestre. Le rapport complet de l'Académie I paraît à la page 7.

PROPOSITION: *M. Bélanger, appuyé par M. Scott, propose l'adoption du rapport.* ADOPTÉE

Academy II: The President, Dr. Karol Krótki, reported that the business meeting of the Academy was held on Tuesday, 7 June. Officers were elected to fill eleven vacancies on various committees within the Academy. A complete list of all officers will be submitted to the secretariat.

Academy II is presently involved in a number of activities and is considering further projects for 1988-89. A complete report begins on page 39.

MOVED *by Dr. Richmond, seconded by Dr. Green, that the report of Academy II be accepted.* CARRIED

Academy III: The President, Dr. E.A. McCulloch, reported that Academy III had met for three and a half hours on Tuesday, 7 June, at which time a slate of officers was elected for 1988-89.

Many issues were debated during the annual business meeting of the Academy and the decisions taken are reported in the complete report.

Of particular interest to all Fellows was the question of Medals and Awards. Academy III had approved a motion that the following recommendations be presented to the Business Meeting:

> that fully funded awards continue to be awarded as in the past
> that the frequency of grouped awards be reduced
> that stipends be replaced by travel expenses on demand.

It was pointed out that the Awards Committee had considered the issue before at the request of Council and that the initiative from Academy III was opposite to the Awards Committee stand.

It was suggested that the Business Meeting take the recommendations of Academy III into consideration and refer it to the Awards Committee. Other Academies should also be given time to consider the recommendations and present their views.

MOVED *by Dr. Barnes, seconded by Dr. Mysak, that the report of Academy III be accepted.* CARRIED

THE REPORT OF COUNCIL/LE RAPPORT DU CONSEIL

The President explained that the Report of Council consisted of two parts, the financial report and the report on activities. Although there is no change in substance in the main body of the report, the report is longer and presents more information on the programs pursued by the Society. The draft report still has to be translated before final approval.

In the absence of the Honorary Treasurer, the Honorary Secretary reviewed the report of the Annual Business Meeting for 1987 and other meetings, the election of new Fellows, deceased Fellows, the reports of the Awards Committee, the Honorary Editor, the Foreign Secretary, the Committee on Symposia, and the Honorary Treasurer.

Le Secrétaire signale que le Trésorier a déjà signé la version préliminaire du rapport. Il suggère que le rapport final soit soumis au Conseil pour approbation après que la traduction aura été complétée.

MOVED *by Dr. Ramsay, seconded by Dr. Laponce, that the Business Meeting receive the report as is, subject to approval by Council at its next meeting.* CARRIED

AMENDMENTS TO THE BY-LAWS/MODIFICATIONS AUX STATUTS

The Honorary Secretary suggested that the three different recommendations be considered individually and voted upon separately.

By-Law 11.1: The Chairman of the Symposia Committee and the Chairman of the Awards Committee are usually invited to attend Council meetings although they are not considered full members of Council.

At its meeting of 23 January, 1988, the Society Council approved a motion submitted by the Executive Committee "that the By-Laws be amended to include the Chairman of the Symposia Committee and the Chairman of the Awards Committee as members of Council on the same basis as the Foreign Secretary."

A letter had been received from a Fellow who will refuse to vote because he questions the legality of the motion as presented. The Honorary Secretary suggested that the Assembly vote on the motion on the

condition that the Honorary Secretary seek advise to make sure that the procedure outlined is legally correct.

MOTION *by Mr. Légaré, seconded by Dr. McCulloch, that there shall be a Council of the Society which shall consist of the Officers of the Society and of the Academies, the President-elect, the Honorary Editor, the Honorary Librarian-Archivist, the Foreign Secretary, the Chairman of the Symposia Committee , the Chairman of the Awards Committee, the immediate Past President for one year from his retirement from the office, and three additional members from Academy III who shall be elected annually at the Annual Business Meeting of the Academy except that if a vacancy occurs a member may be appointed by the Council or the officers of the Academy to fill the vacancy until the next Business Meeting of the Academy.* **CARRIED**

Statuts 11.1: Le Président du Comité des colloques et le Président du Comité des distinctions sont régulièrement invités à assister aux réunions du Conseil de la Société car leur présence est nécessaire à certaines délibérations.

Suite à une recommandation présentée par le Comité exécutif, le Conseil de la Société a approuvé, à sa réunion du 23 janvier 1988, "que le Président du Comité des colloques et le Président du Comité des distinctions deviennent membres du Conseil de la Société au même titre que le Secrétaire pour les affaires internationales."

Le Secrétaire a reçu une lettre d'un membre qui questionne la légalité de la proposition. Le Secrétaire suggère que l'Assemblée vote sur la proposition à condition que le Secrétaire se charge d'en vérifier la légalité.

PROPOSITION *M. Légaré, appuyé par M. McCulloch, propose que le Conseil de la Société se compose des membres du Bureau de la Société et des bureaux des Académies, du Président élu, du Directeur des publications, du Bibliothécaire Archiviste, du Secrétaire pour les affaires étrangères, du Président du Comité des colloques, du Président du Comité des distinctions, du Président sortant pendant l'année qui suit l'expiration de son mandat et de trois membres supplémentaires de l'Académie III qui sont élus chaque année par l'assemblée générale ordinaire de l'Académie; en cas de vacance, le Conseil ou le bureau de l'Académie pourvoit à cette vacance jusqu'à la prochaine assemblée générale de l'Académie.* **ADOPTÉE**

By-law 12.3.2 By-law 12.3.2 states that "in exceptional circumstances two such Fellows may be elected in a year provided that none is elected the following year."

The By-law makes no reference to previous years although Special Fellows may not necessarily have been elected every year. It is recognized that the number of Special Fellows that may be elected should be limited. However, in order to reduce the restrictions imposed by the present By-law, the Society Council, at its meeting of 23 January, 1988, approved a motion submitted by the Executive Committee that By-laws 12.3.2 be changed to allow election of a total of ten (10) Special Fellows over any ten year period.

MOTION *by Mr. Légaré, seconded by Mr. Kattan, that the Selection Committee for the election of Specially Elected Fellows... allowed by Paragraph 12.3.1. A total of ten (10) Special Fellows may be elected for any ten year period with no more than two (2) in any one year as of the date of approval - June 1988. If approved by each body the nomination shall be submitted to the Society.* **CARRIED**

Statuts 12.3.2 Le statut 12.3.2 de la Société spécifie que "si, exceptionnelle-ment, deux membres sont élus la même année, personne ne sera élu l'année suivante."

Le Statut ne prend pas les années précédentes en considération alors que des membres à titre spécial n'ont pas nécessairement été élus durant ces années. On reconnait que le nombre de membres à titre spécial doit être limité; cependant, une proposition visant à rendre le règlement plus souple a été approuvée par le Conseil de la Société à sa réunion du 23 janvier 1988.

PROPOSITION *M. Légaré, appuyé de M. Kattan, propose que le Comité exécutif fait office de comité de sélection ... par le paragraphe 12.3.1. Un total de dix (10) membres à titre spécial peuvent être élus dans une période de dix ans. Un maximum de deux (2) membres à titre spécial peuvent être élus dans une même année, à partir de la date d'approbation de cette proposition, Juin 1988. La candidature est soumise à la Société si elle a été acceptée par les comités compétents.* **ADOPTÉE**

By-law 15 The new orientation of the Royal Society of Canada strongly encourages Fellows to participate in Society affairs so that the Society can benefit from the expertise of its membership. They, in turn, will become more aware of the full scope of the activities and projects of the Society. As activity increases the number of committees will grow, so it

becomes desirable to introduce a greater regularity into the organization of the different committees.

A review of the positions to be filled during 1988-89 has revealed that although most Society positions are controlled by By-Laws, the terms of office for many committees are not clear. In order to assure consistency in the policies of the Society, it is proposed to standardize the terms of office for the Chairman and members of most standing committees.

Since the mandates of the principal officers of the Society, the President, the Honorary Secretary and the Honorary Treasurer are already established at three years, it is suggested that three-year terms of office be established wherever possible. The three-year cycle would provide continuity in activities and would give members a general idea of their commitment. In general, terms would be renewable.

A similar proposal may be developed for ad hoc committees at a later date and Academies would be encouraged to consider equivalent mandates for their Executives, Council, and Section representatives.

Terms of office of Society Committees would be monitored by the Secretariat.

Motions for the committees that are affected by the changes are presented hereafter.

By-law 15.1 Finance Committee

MOVED *by Mr. Légaré, seconded by Dr. J. Wevers that By-law 15.1.1 now read: There shall be a Finance Committee which shall consist of the Honorary Treasurer, the Honorary Secretary, and two or three Fellows appointed by the Council, who have had experience in matters of finance. The Honorary Treasurer shall be the President of the Committee. All terms of office are for three years.* **CARRIED**

By-law 15.2 Editorial and Publications Committee

MOVED *by Mr. Légaré, seconded by Dr. S. Scott, that By-law 15.2.1 be amended to read: There shall be an Editorial and Publications Committee which shall consist of a Honorary Editor, the Associate Honorary Editor, the Editor of the Society's Newsletter (Diversa) and the Editor of each Academy. The first three shall be appointed by the Council for a period of three years and the last three, elected by their respective Academy. The Honorary Editor and the Associate Honorary Editor shall be, one English speaking and one French speaking.* **CARRIED**

By-law 15.6 Committee on International Relations

MOTION *by Mr. Légaré, seconded by Dr. J. Wever that By-law 15.6.1 now read: There shall be a Committee on International Relations which shall consist of a Foreign Secretary who shall be appointed for a three-year term, one member from Académie I, one member from Academy II, and two members from Academy III. The Committee may add up to three members. The Academy members shall be appointed, normally for three years, by Council on the recommendation of the respective Academies. The Foreign Secretary shall be the Chairman of the Committee.* **CARRIED**

By-law 15.7 Committee on Symposia

MOTION *by Mr. Légaré, seconded by Dr. D. Shaw, that By-law 15.7.1 be amended to read: There shall be a Committee on Symposia which shall consist of a Chairman who shall be appointed by the Council, one member from Académie I, one member from Academy II, two members from Academy III, up to three members appointed by the Committee having regard to the program envisaged by the Committee, and the Honorary Editor. The Chairman of the Committee shall be appointed for three years. All appointments are renewable. The members from the Academies shall be appointed normally for three years by their respective Academy councils and shall be members of their councils.* **CARRIED**

Two further adjustments were made in the By-laws to clarify their reading. The first in By-law 15.7.2 brought the English version in line with the French.

MOTION *by Mr. Légaré, seconded by Dr. D. Shaw, that By-law 15.7.2 now read: On matters arising between Committee meetings the Chairman of the Committee shall have authority to act as Secretary for Symposia, in consultation with the President of the Society as appropriate. He shall inform the Committee of such actions not later than at its next meeting.* **CARRIED**

MOTION *by Mr. Légaré, seconded by Dr. J. Wevers, that By-law 15.12 now read: If a position on a Committee becomes vacant, the Council may appoint a temporary member to occupy the position until the next business meeting of the Society.* **CARRIED**

Statuts 15: La nouvelle orientation de la Société royale du Canada encourage les membres à participer aux affaires de la Société afin que la Société puisse bénéficier de leur expertise et afin que les membres soient

au courant des activités et des projets de la Société. Au fur et à mesure que les activités augmenteront, le nombre des comités augmentera. Une certaine régularité dans l'organisation de ces comités devient donc nécessaire.

Une étude des postes à combler pour 1988-1989 montre que la plupart des postes de la Société sont déjà déterminés par les statuts de la Société; cependant, les mandats des comités permanents ne le sont pas. Afin d'assurer une uniformité des politiques de la Société, on recommande une proposition pour standardiser les mandats des comités permanents.

Puisque les mandats des officiers principaux de la Société (le Président, le Secrétaire, le Trésorier) sont déjà établis à trois ans, on recommande que les mandats des comités soient établis à trois ans si possible. Le cycle de trois ans assurerait une continuité dans les activités des comités et donnerait aux membres un aperçu de leur engagement. Généralement, les mandats seraient renouvelables.

La proposition ne s'applique qu'aux comités de la Société mais les Académies sont encouragées à considérer l'établissement de mandats semblables pour leur personnes cadres.

Les mandats de la Société seront surveillés par le secrétariat.

Les changements proposés sont présentés ci-après.

Statut 15.1 Comité des finances

PROPOSITION *M. Légaré, appuyé par M. J. Wevers, propose que le paragraph 15.1.1 des Statuts soit modifié comme suit Le Comité des finances est composé du Trésorier, du Secrétaire et de deux ou trois membres nommés par le Conseil et ayant une certaine expérience en matière de finances. Le Comité est présidé par le Trésorier, tous les mandats sont de trois ans.* **ADOPTÉE**

Statut 15.2 Comité des publications

PROPOSITION *M. Légaré, appuyé par M. S. Scott, propose que le paragraph 15.2.1 des Statuts soit modifié comme suit Le Comité des publications est composé du Directeur des publications, du Directeur adjoint des publications, du rédacteur de Diversa et du chargé des publications de chaque académie. Les trois premiers sont nommés par le Conseil pour une période de trois ans et les trois autres élus par leur Académie respective. Du Directeur des publications et du Directeur adjoint*

des publications, l'un doit être francophone et l'autre anglophone. Le Directeur des publications préside le Comité. **ADOPTÉE**

Statut 15.6 Comité des relations internationales

PROPOSITION *M. Légaré, appuyé par M. J. Wevers, propose que le paragraph 15.6.1 des Statuts soit modifié comme suit Le Comité des relations internationales est composé d'un Secrétaire pour les affaires étrangères qui est nommé par le Conseil pour une période de trois ans, d'un membre de l'Académie I, d'un membre de l'Academy II et de deux membres de l'Académie III. Le Comité peut s'adjoindre jusqu'à trois autres membres. Les membres des Académies sont nommés par le Conseil, habituellement pour trois ans, sur recommendation de leur Académie. Le Secrétaire pour les affaires étrangères préside le Comité.* **ADOPTÉE**

Statut 15.7 Comité des colloques

PROPOSITION *M. Légaré, appuyé par M. D. Shaw, propose que le paragraph 15.7.1 des Statuts soit modifié comme suit Le Comité des colloques est composé d'un président, nommé par le Conseil, d'un membre de l'Académie I, d'un membre de l'Academy II, de deux membres de l'Académie III, de trois membres, au plus, nommés par le Comité en fonction du programme envisagé, et du Directeur des publications. Le Président est nommé pour trois ans. Tous les membres d'une Académie sont nommés habituellement pour trois ans par le conseil de cette Académie et ils doivent faire partie de ce conseil.* **ADOPTÉE**

Deux autres corrections ont été apportées aux Statuts afin d'en éclaicir le sens. La première correction, à la version anglaise, assure la conformité avec la version française.

PROPOSITION M. Légaré, appuyé par M. D. Shaw, propose que le paragraph 15.7.2 des Statuts soit modifié en anglais seulement. **ADOPTÉE**

PROPOSITION M. Légaré, appuyé par M. D. Shaw, propose que le paragraph 15.12 soit modifié comme suit *En cas de vacances au sein d'un comité, le Conseil pourvoit à cette vacance en attendant la prochaine réunion générale de la Société.* **ADOPTÉE**

NEW OFFICER: HONORARY TREASURER/NOUVEAU MEMBRE DU BUREAU: TRÉSORIER

The Committee on Nomination of Officials has recommended the nomination of Dr. D.A. Ramsay as Honorary Treasurer and this recommendation has been approved by Council.

MOVED by Dr. Laponce, seconded by Dr. Batten, that the Business Meeting approve the appointment of Dr. D.A. Ramsay for a three year term effective immediately. **CARRIED**

REPORT OF THE PRESIDENT/RAPPORT DU PRÉSIDENT

The President reported on the many activities undertaken by the Society during the past year. He added that the diversity of the Society is being recognized and that discussions were continuing on several fronts.

During 1987-88, regional meetings took place at l'Université Laval, Université de Montréal, and McGill University. The Executive Director met with Fellows in the West on two occasions.

Response from the Fellowship to the Corporate Plan has been very good. Approximately $200,000 has been received in cash and pledges. Names of donors will be published in the *Calendar* and a second round will be undertaken in September 1988. The support from Fellows is extremely important in our approach to Government. $40,000 a year from the Development Fund has been approved for program activities.

Relations with Government have improved rapidly. Many contacts have been made with influential people, and it is becoming generally known that the Royal Society of Canada is capable of undertaking many projects.

Programs are attracting interest. The successful completion of the AIDS Study has increased visibility and the Global Change project is going forward with preliminary funding by NRC and NSERC.

The President urged Académie I and Academy II to look into their fellowship for members who would be interested in participating in the development of the social aspects of global change - a program being developed jointly with the Institute of Research of Public Policy.

The President expressed his thanks to all Fellows who have participated in the work of the Society, in particular the Executive Director for his continued efforts in the development of programs. He recognized the loyalty of the support staff in dealing with an ever increasing workload.

VOTE OF THANKS

The President expressed his thanks to retiring members of the Executive, Prof. K. Krótki as President of Academy II, and M. Gilles Paquet as Honorary Treasurer, as well as to outgoing members of Council. He added that he hoped to be able to count on them for continued collaboration in Society affairs.

APPOINTMENT OF AUDITORS FOR 1988-89/DÉSIGNATION DES VERIFICATEURS POUR 1988-89

MOVED *by Dr. Ramsay, seconded by Mr. Légaré, that the firm McCay, Duff, Ltd. be retained as auditors for 1988-89.* **CARRIED**

NEXT ANNUAL MEETING

The next Annual Meeting will be held on 4 to 7 June 1989 at Université Laval in Québec City.

OTHER BUSINESS

WOMEN'S ISSUES

Women Fellows declared themselves delighted and proud to be members of the Royal Society of Canada. They went on to request that the Society amend its publications to recognize women members and that formal letters be more neutral. It was agreed that By-Laws and other official documents would be amended to address both sexes.

FUTURE ANNUAL MEETINGS

The question of sites and arrangements for future Annual Meetings was discussed briefly. It was suggested that the Society look very seriously at the situation and consider meeting separately from the Learned Societies. It was pointed out that RSC meetings should be open to the general public not just learned academics; meetings with the Learned Societies might take place in alternate years only. Registration fees are another detriment to attendance.

MOVED *by Dr. Scott, seconded by Dr. McCulloch, that the Society Council consider the proposed sites after the Victoria 1990 Learneds and that after consultation with the Fellowship (i.e., the pool of all Fellows) examine the advantages and disadvantages of meeting at the time of the Learned Societies Conference.* **CARRIED**

Members to be kept informed of developments.

No other business was presented.

MOVED *by M. Dion, seconded by Dr. Richmond, that the Annual Business Meeting be adjourned at 4.35 p.m.* **CARRIED**

Presentation of Awards
Présentation des distinctions

THE THOMAS W. EADIE MEDAL

Arthur A. Axelrad, F.R.S.C.

The Thomas W. Eadie Medal for 1988 is awarded to Dr. Arthur A. Axelrad, Professor of Anatomy, University of Toronto, for his invention of a cell cloning method for rigorous quantification of the reproductive capabilities of cells in complex cell populations, such as bone marrow or malignant tumours. This important method has found wide application in clinical research and in the biotechnology field because of its value for studying the effects of substances which can modify the rate of cell replication, including substances of potential value in the treatment of cancers and of various types of anemia. In addition to this practical value, Axelrad's pioneering method is an important scientific advance that opens a new approach to the study of the process of cell differentiation. This major contribution in the development of contemporary biotechnoloy reflects a scientific career epitomized by innovative and practical approaches, and shown in almost 100 research papers and continuing manifold citations.

THE FLAVELLE MEDAL

Robert H. Haynes, F.R.S.C.

Dr. Haynes has made outstanding contributions to our understanding of genetic stability and change. Understanding of how damage to DNA is repaired is important in understanding mechanisms of mutagenesis, carcinogenesis, aging, and the effects of radiation, and Dr. Haynes has contributed pioneering, seminal work in helping understand the mechanisms of DNA repair. He continues to contribute to this area of research, and to the mathematical analysis of the relationship between dose-rate and mutagenesis. His most recent work deals with genes that influence mutation by means of effects on deoxynucleotide pools.

The Royal Society recognizes Dr. Haynes's notable, important contributions to this important branch of biology by awarding him the Flavelle medal.

THE RUTHERFORD MEDAL IN CHEMISTRY

Raymond J. Andersen

Raymond J. Andersen is an outstanding young organic chemist who has revolutionized the study of marine natural products. His research group has isolated and synthesized a large number of new compounds that are present in cold water marine organisms, a hitherto unexploited source of such materials. Many of these compounds have been shown to have important anti-bacterial and anti-fungal properties. In addition to their practical importance the compounds provide important evidence in the investigation of biosynthetic pathways present in marine organisms. His research is characterized by a high degree of technical skill and by a profound understanding of the means by which organic chemistry can be brought to bear on the workings of biological systems.

THE RUTHERFORD MEDAL IN PHYSICS

Claude Leroy

Dr. Leroy is recognized as an accomplished physicist who plays a leading role in the development of young physicists in Quebec. He has been involved in important experiments in low energy, intermediate energy, and high energy nuclear and particle physics.

Dr. Leroy has an impressive record of achievements in Electro-Weak Interactions (including second-class currents, conservation of the electronic and muonic numbers), Strong Interations (including heavy-flavour production, the search for the Quark Glucon Plasma), Calorimetry (he built the first calorimeter which uses silicon as a medium), and the ZEUS project (to be performed at DESY in Hamburg by an international consortium). The main goal of ZEUS is to explore physics beyond the standard model and look for new families of heavy particles as predicted by supersymmetry and technicolour. Dr. Leroy is expected to play a major role at the level of analysis inside the Canadian group working in ZEUS.

Until 1980, Dr. Leroy worked as a researcher both in experimental and theoretical physics, when he chose to pursue strictly experimental activities. Dr. Leroy has been working in the HELIOS experiment since 1984. HELIOS is probably the largest Fixed Target experiment in operation to date with 120 physicists from 22 Institutes. He leads the McGill group responsible for the operation and physics analysis of the HELIOS Calorimetry System, the world's best performing calorimeter detector.

THE TYRRELL MEDAL

Michael Bliss, F.R.S.C.

Professor Bliss's contributions to Canadian historical scholarship fall into two categories. *Northern Enterprise* (1987), *A Living Profit* (1974) and *A Canadian Millionaire* (1978) examined business culture in its broadest sense; and in *The Discovery of Insulin* (1982) and *Banting* (1984) he reconstructed an exceptionally complex inner history of the research and the conflicts of personalities that led to a cure for diabetes. His *Canadian Millionaire* received the two highest awards of the Canadian Historical Association and his insulin study received similar recognition abroad.

Reports of Academies
Rapports des Académies

ACADÉMIE I: ACADÉMIE DES LETTRES ET DES SCIENCES HUMAINES

Procès-verbal de l'assemblée annuelle
Université de Windsor, Windsor
Le 6 juin 1988 à 12h30

Etaient présents: A.-J. Bélanger, G. Bélanger, B. Beugnot, P.-Y. Denis, G. Dion, H. Guidon, N. Kattan (président), J. Légaré, F. Lepore

1. L'ordre du jour est adopté à l'unanimité.

2. Le procès-verbal de la dernière assemblée annuelle, le 1er juin 1987 à l'Université McMaster de Hamilton, est adopté à l'unanimité.

3. N. Kattan trace un bilan de la première année de son mandat (présenté en annexe).

4. La composition du conseil pour la prochaine année est la suivante:

N. Kattan, président; G. Paquet, vice-président; J. Demers, secrétaire; J.P. Wallot, ancien président. Les autres membres sont Gérald Beaudoin, Andrée Désilets, François Duchesneau, Maurice Lebel, Jacques Légaré, Louis Sabourin, et Guy Sylvestre.

Les autres nominations sont:

Comité des candidatures: P. Hurtubise, J. Lévesque
Médaille Hannah: J. Monet
Médaille Tyrell: F. Ouellet
Comité des distinctions extérieurs: J. Demers
Comité des colloques: J.-C. Robert
Union international de l'histoire et de la philosophie de la science: F. Duchesneau
Institut international d'analyse appliquée des systèmes: A. Raynauld
Commission canadienne de l'Unesco: E. Lamirande

Ces nominations sont proposées par P.-Y. Denis et appuyées par A.-J. Bélanger. Certaines nominations ne sont pas définitives parce qu'elles relèvent de la Société.

5. Une discussion ouverte suit sur les orientations et projets de la Société de l'Académie. Parmi les sujets traités, il y l'expansion du programme de recherche de la Société et l'importance d'accroître le nombre de membres féminins dans l'Académie.

La séance est levée à 13h40.

Gérard Bélanger
Secrétaire, Académie des lettres et des sciences humaines.

ANNEXE A: Rapport du président

Le président de l'Académie des lettres et des sciences humaines, Naïm Kattan

La première fonction de notre Académie, au cours de l'année dernière, fut la présentation du Prix de la Fancophonie au Sommet de la francophonie à Québec, à monsieur Georges Schéhadé. Nous avons organisé la remise du prix à monsieur Schéhadé. Le prix a été remis par Son Excellence le Gouverneur Général du Canada, Madame Jeanne Sauvé, devant des représentants du monde littéraire et culturel du Canada et du monde francophone.

Nous avons ensuite eu, au cours du mois de juin, le colloque l'Homme et la ville, au cours duquel trois conférenciers ont débattu plusieurs aspects de la question, monsieur Jean Claude Marsan, monsieur Paul-Yves Denis et moi-même. Nous avons poursuivi nos liens avec le monde académique étranger et j'ai été invité à représenter la Société royale à la célébration du cinquantenaire de l'Académie royale Belge à Bruxelles.

Nous avons eu deux présentations magnifiques de six nouveaux membres de la Société royale, présentations faits à Montréal. Notre Académie a également élu les nouveaux membres suivants: André-J Bélanger, Bernard Beugnot, Kenneth Gilbert, Alain Haurie, Charles Le Blanc, Franco Lepore, Jacques Mathieu, Jean-Jacques Nattiez, Régine Robin et Robert Sevigny.

ACADEMY II: ACADEMY OF HUMANITIES AND SOCIAL SCIENCES

Annual Business Meeting
University of Windsor
7 June, 1988

The meeting was called to order at 14:05 hrs. Present: K.J. Krotki (Chair), J.A. Laponce (Vice-President and President-elect), A.H. Richmond (Honorary Secretary), and approximately 18 other members. Regrets: F.G. Halpenny, G.M. Story, D. Waters.

1. The Chairman's list of agenda items was approved.

2. The Minutes of the meeting held at McMaster University, Hamilton, 2 June, 1987 were approved without amendment.

3. Under matters arising from Minute 6 of the last meeting, Professor A. Scott enquired what action had followed concerning the employment of foreign scholars. The President reported that correspondence with the Minister of Employment and Immigration indicated no change in the government's policy, but some relaxation of the rules concerning simultaneous advertizing in Canada and abroad. He pointed out that it is now up to the academics to ensure that universities use this opening.

4. The Academy recognized with a few moments of silence the deaths, since its last meeting, of Professors A. Lower, C.B. Macpherson, R.B.Y. Scott, J.R. O'Donnell and E.T. Salmon.

5. The President reported on current activities of the Society and the Academy. These include the AIDS report now available; the Development Fund which has now reached $200,000 in donations and pledges; representations had been made to the Minister responsible for Statistics Canada concerning cost-recovery policies for their publications.

6. The need to improve the nominations procedure for New Fellows, keeping in mind the importance of electing qualified women to the Academy, was discussed. It was noted that a sub-committee of the Council had been set up (consisting of Professors Krotki and Halpenny) to explore ways of opening up nominations.

7. The question of the timing of Academy meetings was raised from the floor. The question of whether meetings should coincide with the Learned Societies' meetings will be considered by the Society Council and Executive.

8. The President invited Fellows to bring forward suggestions for the programme of the 1990 meetings and to communicate them to the incoming President (Jean Laponce) as soon as possible. Plans for the meetings in Laval in 1989 are in hand.

9. On behalf of Professor Halpenny (Chair of the Nominations Committee), the Honorary Secretary introduced the slate of nominations to committees for the coming year (attached). The list was accepted unanimously. The Nominating Committee was also authorized to fill any vacancies that may arise before the next meeting.

10. The President reported on the role of the Royal Society of Canada as a "national Academy". It was noted that the increased activity of the Society had resulted in considerable increase in expenditures leading to a deficit which necessitated drawing on our financial reserve funds. The question of the use of the Society's name without consultation with the membership was raised. The President noted that these matters were usually brought to the Executive Committee of the Society. There is a proposal for a Newsletter that would keep Fellows better informed. The importance of not neglecting the Humanities and Social Sciences in any expanded role for the Society was emphasized. The Vice-President noted that there is a momentum at the Society level at present. Rather than passing a motion at this meeting he would prefer to take into account the sense of the meeting as expressed by various speakers.

11. Under other business, the President noted that job descriptions for Officers of the Academy had been prepared. These will be synchronized with a similar document for the Officers of the Society now being considered. As Chair of the Nominations Committee for the next two years he will welcome new names being brought forward for various positions to be filled.

12. A motion of thanks to the out-going President, Karol Krotki, was proposed by Anthony Scott, seconded and passed unanimously.

The meeting adjourned at approximately 16:00 hrs.

A.H. Richmond, Secretary

APPENDIX A: REPORT OF THE NOMINATING COMMMITTEE COUNCIL 1988-1989

J.A. Laponce (Political Science, UBC), President 1988-1991
R. Craig Brown (History, Toronto), Vice-President, 1988-1991
K.J. Krótki (Sociology, Alberta), Past President 1988-1991
A.H. Richmond (Sociology, Toronto), Secretary 1987-1989

Honorary Editors: I.M. Drummond, Economics, Toronto
J.M. Robson, English, Toronto

J.A. Leith, History, Queen's, Symposia Committee

Members of Council 1987-1989

K. Grayson, Near Eastern, Toronto
J. Warkentin, Geography, York
G. Finley, Art History, Queen's

Members of Council 1988-1990

J. McMaster, English, Alberta
M. Valdes, Comp. Lit., Toronto

New Fellows Committee

Members 1987-1989

F. Craik, Psychology, Toronto
J.W. Hayes, Archaeology, ROM
D. Laidler, Economics, UWO
A. Saddlemeyer, English, Toronto

Members 1988-1990

S. Wise, History, Carleton
P. Stewart, Italian, McGill

Notes: The Chair of the New Fellows Committee is the Vice President of the Academy. The Secretary of the New Fellows Committee is the Secretary of the Academy. The President of the Academy is ex officio a member of the New Fellows Committee.

The Society's *Symposia Committee*

1987-1989	V. Nelles, History, York
1988-1990	M. Friedland, Law, Toronto

The Society's *International Relations Committee*

1987-1989	S. Trofimenkoff, History, Ottawa
1988-1990	R.J. Sandbrook, Political Science, Toronto

Society's *Awards Committee*

1988-1991	K.J. Krotki (ex-officio, Past-President of Academy II)
1987-1989	A.H. Richmond (ex-officio, Secretary of Academy II)

The Society's *Medal Committees*

Chauveau Medal for the selection of 1989:

D. Fishwick, Classics, Alberta

for the selection of 1989 and 1991:

L. Lane, English, UNB

Hannah Medal for the selection of 1989:

I.M. Hacking, Hist of Science & Tech, Toronto

Innis-Gérin Medal for the selection of 1989:

1985-1989	F.T. Denton, Economics, McMaster
1987-1991	Dale Gibson, Law, Manitoba/Alberta

Lorne Pierce Medal for the selection of 1989:

1986-1991	David Hayne, French, Toronto
1988-1990	W.H. New, English, UBC

Tyrrell Medal for the selection of 1990:

1986-1992	R. Cook, History, York
1988-1992	M. Kitchen, History, Simon Fraser

External Awards

1987-1989	J. McMaster, English, Alberta
1988-1990	D. Smith, Political Science, Saskatchewan

ACADEMY III: ACADEMY OF SCIENCE/ ACADEMIE III: ACADEMIE DES SCIENCES

Minutes of the Annual Business Meeting,
University of Windsor
7 June 1988

About forty Fellows were present.

1. *President's Report:* The President brought Fellows up-to-date on the activities of the Society, outlining its transformation from a largely honoric function to a proactive force in Canadian society. Many studies have recently been completed or are in progress. He noted especially the

AIDS study, and said that the nature of the Royal Society must change in order to make its role as a true National Academy possible.

Dr. Hurst pointed out that 12 years ago, NRC had been willing to hand over relations with NGO's in other countries to the Society: now we were negotiating the same area again.

Dr. Kendrick read the list of 19 deceased Fellows, after which Fellows stood and observed some moments of silence.

2. *Minutes:* A motion (Karl/Bushuk) to approve the minutes of last year's meeting was adopted unanimously.

3. *Awards:* Dr. Rochester reported that the Fellows of the Earth Science section were uneasy about the possibility that some of the Society's awards might be given less frequently. They felt that the fact of the award was in itself sufficiently prestigious, and that there was no need for the medal to be accompanied by a cash award. He therefore proposed "That cash awards accompanying the Chauveau, Dawson, Flavelle, Innis-Gérin, Pierce, Miller, Tory and Tyrell medals be discontinued wherever possible, so that these medals can continue to be awarded at their present frequency" (seconded by Barnes). After an animated discussion, this motion was overwhelmingly adopted by the meeting. Immediately following the vote, the lights went out, occasioning much laughter and comment among Fellows.

4. *Program Committee:* Dr. Barnes reported details of this year's program and of plans for future years at Laval and Victoria.

Health Effects of Acid Rain: A small committee, chaired by Dr. Macklem, had produced an excellent report. The study was now complete.

Ontario Nuclear Safety Study: This study, led by Dr. Ken Hare, was now complete, and its report has been submitted to the Ontario Ministry of Energy. An Executive summary can by obtained by writing to Head Office of the Royal Society.

Health Effects of Hydro Transmission Lines: The Society will oversee and review this study which is being carried out by Ontario Hydro. The Society's representatives will be Drs. Bruce, Buck, Hammond, Hare, and Stewart. The study will extend over five years.

Global Change: Dr. McLaren reported that a contract has been signed with NRC, and that the Royal Society steering committee is now the official body coordinating activities within Canada, and with international organizations. Major funding requests have been made to NSERC and

SSHRC, and interim financing was already in hand. This study represented a major enterprise for the whole Society.

COPSE: Last November, a successful symposium for scientists and parliamentarians had been held under the aegis of the Speaker of the House, John Fraser, and another one was planned for this November. Three M.P.s, Messrs. Tupper, McCurdy, and Caccia, were helping to coordinate these activities, and monthly lunches were also being held.

International Affairs: The Rutherford lecturer from the Royal Society of London will be Prof. Epstein, the Foreign Secretary of R.S.L., who will be in Canada in October-November.

Our visiting lecturer from France will be Prof. Azerad, a biochemist with biotechnology interests. His host will be Dr. Brian Jones of the University of Toronto.

Internal Affairs: A committee to consider the structure of the Academy has been initiated. Dr. Chris Barnes is the Chair, and will be seeking representatives of the various groups who are willing to participate. All aspects of the Academy would be under review, including the names and constituencies of sections, distribution of new Fellows, election procedures, and problems of representation concerning gender, language, and geographic distribution. A slate of committee members will be presented to the September meeting of Council.

Section Reports:

Physics: 6 Fellows met. Officers elected. Convenor: G. Karl. Rapporteur: J. Hardy.

Chemistry: 1 Fellow present, no business transacted.

Mathematics: 3 Fellows present. Businness meeting held in Ottawa at annual meeting of Math. Society. Officers elected. Convenor: J. Arthur. Rapporteur: D. Handelman.

Interdisciplinary: 9 Fellows met. Officers elected. Convenor: L. Mysak. Rapporteur: R. Haynes.

Earth Science: 9 Fellows met. Officers elected. Convenor: M.G. Rochester. Rapporteur: S.D. Scott. Second Rapporteur: R.O. Lindseth.

Applied Science: 2 Fellows present. Officers elected. Convenor: M. Païdoussis. Rapporteur: L. Shemilt.

Plant Biology: 3 Fellows met. Officers reconfirmed. Convenor: W. Bushuk. Rapporteur: M. McCully.

Animal Biology: 4 Fellows met. Officers elected. Convenor: D. Mettrick. Rapporteur: J.G. Eales.

Microbiology and Biochemistry: 3 Fellows present, Convenor absent; no business transacted.

Dr. Stewart announced that Dr. H.O. Pritchard (Chemistry, York University) had agreed to let his name stand for the Vice-Presidency. No other nominations were forthcoming, so Dr. Pritchard was acclaimed.

A motion "That Academy III recommends that the Society's Program Committee plan future program activities on at least a two-year schedule," was adopted by the meeting, after which the adjournment was called.

B. Kendrick, Secretary

Order of Proceedings for the Annual Meeting
Programme du congrès pour la Réunion annuelle

ORDER OF PROCEEDINGS

Sunday, 5 June, 1988

09:00-18:00	**Society**	Registration and signing-in
09:30	**Society**	Editorial and Publications Committee
	Academy III	Council
10:00	**Académie I**	Council
	Academy II	Council
10:30	**Society**	Committee on Symposia
	Society	Finance Committee
11:00	**Académie I**	Council
12:15	**Society**	Executive Committee
14:00	**Society**	Council
19:30	**Society**	New Fellows Assemble
19:45	**Society**	Officers Assemble
20:00	**Society**	First General Assembly

Address of Welcome: Dr. Ronald Ianni, C.M., B.A., B.Com., LL.B., CUECE (Dip), IHEI (Dip), Ph.D., Qc, President of University of Windsor

Presentations of New Fellows

21:30	**Society**	Reception offered by University of Windsor to meet New Fellows and recipients of Awards

Monday, 6 June, 1988

08:00-
12:00 **Society** Registration and signing-in

09:00 **Society** Symposium: Part I: "Future Changes and Challenges to Canadian Water Resources"

Chairman: Dr. D.W. Schindler, Freshwater Institute, Winnipeg

Dr. G. Kenney-Wallace, President, Science Council of Canada

Robert Fournier, Chairman, Science Council of Canada Panel on Water Resources, "Canada's Water Resources for the 1990s"

Harold Harvey, University of Toronto, "Effects of acid rain on Canada's freshwaters"

Eville Gorham, University of Minnesota, "Effects of air pollutants on Canada's wetlands"

John Cherry, University of Waterloo, "Contamination of groundwater with toxic pollutants"

David Bates, University of British Columbia, "Water pollution and human health"

12:00 **Académie I** Luncheon: Business Meeting

Academy II Luncheon: New Fellows will be recognized

Academy III Luncheon: Invited guest: Prof. M.A. Epstein, F.R.S., Foreign Secretary, Royal Society of London

14:00 **Society** Symposium: Part II: "Future Changes and Challenges to Canadian Water Resources"

Chairman: Andrew C. Hamilton, International Joint Commission

Marie Sanderson, Director, Great Lakes Institute, Windsor, "Effects of Climate Change on the Great Lakes"

Anthony Scott, University of British Columbia, "Economic Consequences of Global Change"

Michael Keating, Toronto, "The Future Challenges for Canada's Water Resources"

R. W. Slater, ADM, Policy, Environment Canada, "Policy Implications of Global Change for Water Resources[4]

Open Discussion

20:00 **Society** Informal discussion of Society projects and activities

Tuesday, 7 June, 1988

08:30-
09:30 **Academy III** Section Business Meetings: Mathematics, Physics, Chemistry, Earth Sciences, Plant Biology, Animal Biology, Microbiology and Biochemistry, Interdisciplinary, Applied Science, Medical Science

09:00 **Académie I** Symposium: Part I: "La dynamique urbaine"

Chairman: Gérard Dion, Université Laval

Jean-Claude Marsan, Université de Montréal, "Les nouvelles tendances dans le développement des villes"

Paul-Yves Denis, Université Laval, "Envahissement et croissance incontrolables des métropoles latino-américaines"

Naïm Kattan, Conseil des Arts du Canada, "L'écrivain et la ville"

Academy II Symposium: Part I: "Why Are Canadians Dying Out?"

Chairman: Lorna Marsden, University of Toronto

Karol J. Krótki, University of Alberta, Presidential Address, "Why are Canadians Dying Out?"

Marc Termote, UQAM, "Why are Quebecers Dying Out Even Faster than Other Canadians?"

Michael E. Murphy, Health & Welfare Canada, "The Canadian Review of Demography and Its Implications for Economic and Social Policy: Will it Deliver Building Blocks for a Population Policy?"

09:30 **Academy III** Business Meeting

10:30 **Academy III** Medallists speak on their work

Chairman: E.A. McCulloch

A.A. Axelrad, University of Toronto, "On my Way to Serendip"

14:00 **Academy II**: Business Meeting

Academy III: Nominating Committee

15:00 **Society**: Annual Business Meeting

18:45 **Society** Reception

19:30 **Society** **Annual Dinner**

Presentation of Society Awards:

The Thomas W. Eadie Medal: Arthur A. Axelrad
The Flavelle Medal: Robert H. Haynes
The Rutherford Medal in Chemistry: Raymond J. Andersen
The Rutherford Medal in Physics: Claude Leroy
The John L. Synge Award: James Arthur
The Tyrrell Medal: Michael Bliss

Wednesday, 8 June, 1988

09:00 **Académie I** The Academy is invited to attend the Academy II Symposium

09:00 **Academy II** Symposium: Part II: "Why Are Canadians Dying Out?"

David Armstrong, University of Western Ontario, "Development in Technology of Reproduction: The Medical Aspects"

Susan A. McDaniel, University of Waterloo, "A new stork rising: Women's roles and reproductive changes?"

Leslie Green, University of Alberta, "Abortion, the Foetus, and the Supreme Court"

Jean A. Laponce, University of British Columbia, "Global Change in Languages and their Territories"

09:00 **Academy III** Symposium: "Advanced Materials: Sciences and Applications"

Chairman: A. John Berlinsky, McMaster University

Jean M.J. Fréchet, Cornell University, "Design and Applications of Polymers in Microelectronics"

L.M. Brown, Cambridge University, "Electron Microscopy and Metals Characterization"

Mike Lee, University of Toronto, "Biomaterials Science: High Technology and the Future of the Surgical Implant"

Mort Panish, AT & T Bell Laboratories, " 'Heterostructures': Multilayer Single Crystals for Managing Light and Electrons"

John Weaver, University of Minnesota, "The Chemistry and Physics of Solid Interfaces"

Jules Carbotte, McMaster University, "High Temperatures Superconductivity"

12:00	**Academy II**	**Luncheon: New Fellows are introduced**
13:00	**Society**	**Luncheon: New Council/Executive**
14:00	**Society**	**New Council**
16:00	**Society**	**New Executive**

ORDRE DU JOUR

Dimanche, 5 juin 1988

09h00-18h00	**Société**	Inscription
09h30	**Société**	Comité d'édition et des publications
	Académie III	Conseil
10h00	**Académie I**	Conseil
	Academy II	Conseil
10h30	**Société**	Comité des colloques
	Société	Comité des finances
11h00	**Académie I**	Conseil
12h15	**Société**	Comité exécutif
14h00	**Société**	Conseil
19h30	**Société**	Rencontre des nouveaux membres
19h45	**Société**	Rencontre du groupe de la tribune
20h00	**Société**	Première assemblée générale
	Accueil: Dr. Ronald Ianni, C.M., B.A., B.Com., LL.B., CUECE (Dip), IHEI (Dip), Ph.D., Qc, Président, Université de Windsor	
	Présentation des nouveaux membres	
21h30	**Société**	Réception offerte par l'Université de Windsor pour rencontrer les nouveaux membres et les lauréats des distinctions

Lundi, 6 juin 1988

08h00-12h00	**Société**	Inscription

09:00 **Société** Colloque: 1re partie: "Future Changes and Challenges to Canadian Water Resources"

Président: Dr. D.W. Schindler, Freshwater Institute, Winnipeg

Dr. G. Kenney-Wallace, Présidente, Conseil des Sciences du Canada

Robert Fournier, Président du Comité du Conseil des sciences du Canada sur les ressources en eau, "Canada's Water Resources for the 1990s"

Harold Harvey, Université de Toronto, "Effects of acid rain on Canada's freshwaters"

Eville Gorham, Université du Minnesota, "Effects of air pollutants on Canada's wetlands"

John Cherry, Université de Waterloo, "Contamination of groundwater with toxic pollutants"

David Bates, Université de la Colombie britannique, "Water pollution and human health"

12h00 **Académie I** Déjeuner d'affaires

Academy II Déjeuner: les nouveaux membres se présentent

Académie III Déjeuner: Invité d'honneur: Dr. M.A. Epstein, F.R.S., Secrétaire pour les affaires étrangères, Royal Society of London

14h00 **Société** Colloque: 2e partie, "Future Changes and Challenges to Canadian Water Resources"

Président: Andrew C. Hamilton, Commission mixte internationale

Marie Sanderson, Directrice, Great Lakes Institute, Windsor, "Effects of Climate Change on the Great Lakes"

Anthony Scott, Université de la Colombie britannique, "Economic Consequences of Global Change"

Michael Keating, Toronto, "The Future Challenges for Canada's Water Resources"

R. W. Slater, SMA Planification, Environnement Canada, "Policy Implications of Global Change for Water Resources"

Discussion libre

20h00 **Société** Discussion des projets et activités de la Société

Mardi, 7 juin 1988

8h30-
9h30 **Académie III** Réunions d'affaires des sections: Mathématiques, Physique, Chimie, Sciences de la terre, Biologie végétale, Biologie animale, Microbiologie et biochimie, Interdisciplinaire, Sciences appliquées, Science médicale

9h00 **Académie I** Colloque: 1re partie: "La dynamique urbaine"

Président: Gérard Dion, Université Laval

Jean-Claude Marsan, Université de Montréal, "Les nouvelles tendances dans le développement des villes"

Paul-Yves Denis, Université Laval, "Envahissement et croissance incontrolables des métropoles latino-américaines"

Naïm Kattan, Conseil des Arts du Canada, "L'écrivain et la ville"

9h00 **Academy II** Colloque: 1re partie: "Why Are Canadians Dying Out?"

Président: Lorna Marsden, Université de Toronto

Karol J. Krótki, Université de l'Alberta, Adresse du président, "Why are Canadians Dying Out?"

Marc Termote, UQAM, "Why are Quebecers Dying Out Even Faster than Other Canadians?"

Michael E. Murphy, Santé et Bien-être Canada, "The Canadian Review of Demography and Its Implications for Economic and Social Policy: Will it Deliver Building Blocks for a Population Policy?"

9h30 **Académie III** Réunion d'affaires

10h30 **Académie III** Les lauréats de distinctions parlent de leur oeuvre

Président: E. A. McCulloch

A.A. Axelrad, Université de Toronto, "On my Way to Serendip"

14h00 **Academy II** Réunions d'affaires

Académie III Comité de nominations

15h00 **Société** Assemblée générale ordinaire

18h45 **Société** Réception

19h30 **Société** Dîner

Présentation des médailles

La médaille Thomas W. Eadie: Arthur A. Axelrad
La médaille Flavelle: Robert H. Haynes
La médaille Rutherford en chimie: Raymond J. Andersen
La médaille Rutherford en physique: Claude Leroy
La prix John L. Synge: James Arthur
La médaille Tyrrell: Michael Bliss

Mercredi, 8 juin 1988

9h00 **Académie I** L'Académie est invitée à assister au colloque de l'Academy II

9h00 **Academy II** Colloque: 2e partie: "Why Are Canadians Dying Out?"

David Armstrong, Université de Western Ontario, "Development in Technology of Reproduction: The Medical Aspects"

Susan A. McDaniel, Université de Waterloo, "A new stork rising: Women's roles and reproductive changes?"

Leslie Green, Université de l'Alberta, "Abortion, the Foetus, and the Supreme Court"

Jean A. Laponce, Université de la Colombie britannique, "Global Change in Languages and their Territories"

9h00 **Académie III** Colloque: "Advanced Materials: Sciences and Applications"

Président: A. John Berlinsky, Université McMaster

Jean M.J. Frechet, Université Cornell, "Design and Applications of Polymers in Microelectronics"

L.M. Brown, Université Cambridge, "Electron Microscopy and Metals Characterization"

Mike Lee, Université de Toronto, "Biomaterials Science: High Technology and the Future of the Surgical Implant"

Mort Panish, Laboratoires AT & T Bell, " 'Heterostructures': Multilayer Single Crystals for Managing Light and Electrons"

John Weaver, Université du Minnesota, "The Chemistry and Physics of Solid Interfaces"

Jules Carbotte, Université McMaster, "High Temperatures Superconductivity"

12:00	**Academy II**	Nouveaux membres se présentents
13:00	**Société**	Déjeuner: Nouvel Exécutif/nouveau Conseil
14:00	**Société**	Nouveau Conseil
16:00	**Société**	Nouvel Exécutif

ADDRESS TO THE ACADEMY COUNCILS, 23 SEPTEMBER, 1988, BY THE HONOURABLE FRANK OBERLE, MINISTER OF STATE (SCIENCE AND TECHNOLOGY)

I could not help but feel flattered by your kind invitation to speak to you today, because I know how rarely you have invited politicians to be on your agenda. Perhaps that is because the Royal Society concerns itself in the main with matters pertaining to science, a subject in which politicians are perceived to have little understanding or interest.

The Royal Society's first president, Dr. J.W. Dawson, underlined that fact when he noted in 1881 that it was impossible for Ministers, however able or enlightened, to be invariably competent in dealing intelligently with questions which form no part of an ordinary political education. Nor can they always find in the ranks of the civil service capable assistance upon such topics.

Dr. Dawson did however recognize the importance of science to the economy and to government by saying: "A locust or a parasitic fungus can reduce to naught the calculations of a finance minister."

That was over 100 years ago, but even today politicians and scientists still have healthy scepticism about one another. Sometimes it seems we are different species altogether. But at least while some find it difficult to get along, we have come to realize more and more how much we need one another.

The efforts of scientists must conform with the fundamental laws of nature. Politicians must live within fundamental laws of democracy. *Your* work and accomplishments are rated and judged by your peers. *My* performance is judged by the opinion of the public. Perhaps as Minister of Science, occupying the buffer zone between the two groups, I can see more clearly the need for scientists to serve the interests of our country and for our country to serve the interests of science. If Canada is to prosper, neither politicians nor scientists can afford to be misunderstood by the other or worse, work at cross purposes.

Now I shall not attempt a scientific lecture to this august gathering, but I would like to pass on some of the facts of life in politics and to give some political advice. Politicians live under constant public scrutiny, well informed or otherwise. It is a fact of political life that any politician who wants to be re-elected must pay close attention to polls, to the press, to all reports of what the public are saying. There is nothing sinister about this - it is a fact of democracy.

I do not think that scientists fully understand that the law of politics is not as absolute as the law of nature because while public opinion can be led or shaped, you cannot drive it. Politicians can offer ideas, proposals, and warnings, but we cannot force the public to allocate resources for causes they do not understand or with which they are in disagreement. It was all very well for an Edmund Burke to say he owed his electors only his judgement and his conscience - but his electors soundly defeated him at the polls.

You can see that this political lecture has direct relevance to government support for the science community. You and your colleagues have told the government many times that Canada's research and development efforts are underfunded. You have appealed for more resources, for a new recognition of the importance of science and technology to our economic and political future, and in fact there are few that would not agree that all our future prospects for economic growth, industrial expansion and social progress, will be determined by our ability to understand and to harness the new forces which are reshaping the world.

The government has responded, with councils, policies, programs and cash. All of us agree that more is needed - much more. You know more is required. I know it too. But if we are to get more, we are going to have to insure that across the country, Canadians understand and support - indeed, insist - that adequate resources are spent efficiently on research.

Together we have to find ways to educate the public, to educate our youth, to arrange for science to become an element of our culture. This is where science and politics must come together. We need to work on this because the same public which has become so cynical about politics is also becoming mistrustful of science.

It is easy to understand why the general public is concerned. Every day we hear of some new miracle of science which will transform our lives in ways other generations could only visualize in their dreams. And every day, we also hear of technology gone awry. We are learning, sadly, that science is not necessarily beneficent, that "progress" is not autonomous or an automatic result of science and technology.

As people become more conscious and concerned about the deterioration of the environment, they see that chemicals developed to improve agricultural production, products developed to improve industrial processes - PCBs, for example - were committed to use before the consequences to human life and global ecosystems were clearly understood. We have been surprised to learn as well that technology does not limit itself to the material world, but also interacts with social

values and institutions. We find that the results of technology are often unexpected, the consequences sometimes tragic.

People sense that they are caught up in revolutionary change and initially at least, change is always resisted. This of course is nothing new. Consider the impact on our civilization of the industrial revolution. It produced unimaginable wealth in European countries. It stimulated science, learning, and material progress. It also produced hardship, abject poverty, squalor and despair, especially in its early stages. More recently, it has brought us dying forests, scarred landscapes, poisoned water and air. Suddenly - just in the last two decades or so - residents of industrial nations began to be aware that we were paying a dear price for what we call "progress". Now, we are adding up the costs and trying to stop more damage.

Do not misunderstand me: I am not blaming science and technology for problems which are the result of human behaviour which may have caused science to be applied unwisely. But I am saying that all of us must share responsibility for our current circumstances, good and bad. Business people, consumers, workers - and yes, scientists and politicians - all played a part in getting us wherever it is we are today. And all of us must work together to redress any damage past excesses may have caused and to exercise greater caution to contain future change within the bounds of the values which we embrace as a society.

I hope you are not among the scientists who feel that they have no responsibilities for the manner in which science is applied, scientists whose obligations are over when their papers are published. I can tell you that in considering moral responsibility for actions, the public believes that discovery cannot be entirely divorced from its creator. This is true for the creations that help us fight disease, relieve pain and suffering, that extend our life span, as well as those that can be used to kill, maim and annihilate our entire species and destroy our planet.

As you know well, the revolution underway now, which offers so much hope, is fundamentally more profound, and potentially more menacing, than the development we have achieved in the past. The revolution we are experiencing in our lifetimes - and it looks as if we will experience more than one - is changing our assumptions about wealth and progress as knowledge becomes power, as information becomes currency. Nations - indeed, perhaps the whole species - will rise or decline depending on their adaptation to these new realities.

Canada is not exempt: either we use our intellect, coordinate our efforts, cooperate in the pursuit of our objectives, or we shall fade into insignificance as a nation. Canadians have every right to demand a response to the new situation which confronts us, from politicians *and* scientists. Even though Canadians understand that precise answers will

have to await thorough study and thoughtful contemplation, they want to be sure that scarce resources, human and fiscal, are being used efficiently and intelligently to set priorities and to act on them, to develop new products, processes and services; to create new economic enterprises; and most of all, to manage - perhaps through enlightened self-interest - the social changes science will impose on ourselves and the global community.

When Canadians ask, what kind of nation do we want to be? what kind of world do we want to leave for our children? what protection will we give to our lands and forests, our rivers and oceans? they want to know that scientists, even more than others, are participating *with them* in arriving at acceptable answers and seeing them implemented at every level of the Canadian polity. And that is what brings me here today. I am here plainly and simply to ask for the help of the Royal Society and to offer you the cooperation of the government in the furthering of your work.

In your role as scientists, you have already earned enormous respect and recognition. But as a result of the scientific and technological revolution which presses upon us at an ever-increasing rate, the old, comfortable roles and divisions of responsibility which have been accorded the sectors of Canadian society may have to give way to new rules. New tasks are demanded of government. Competitiveness within our industrial sectors is giving way to cooperation in the face of new global challenges. And I am wondering if some of the old comfortable roles that scientists have played in the body politic may also have to change. Let me suggest some roles in which I would like to see scientists become more active.

Scientists can and should pose some of the profound long-view questions which must be the subject of national debate. Scientists can join politicians to provide leadership that creates new human energies, higher human vision, which motivates Canadians to subordinate short-term interests to longer-term objectives and goals of higher order. Perhaps scientists can help us to understand better the limits of science. I would like to see scientists help us to insure that, amidst the production of fantastic luxuries, we devote an appropriate amount of attention to the basic requirements of human society throughout the world.

Scientists, I hope, can help us to understand that the relentless pursuit of knowledge is not a substitute for wisdom. While science expands the limits of what is *possible*, we must look to our values if we are to determine what is *wise*. Scientists can help remind us that although knowledge may be pure, its application must conform to our ethical and moral values. In completing these tasks, you will help us transform our nation.

Those are some of the things I wanted to get off my chest, and I thank you for your indulgence. I hope you agree with me at least on the need to develop a new relationship between science and politics.

Perhaps a look at the past will give us some suggestions as to how to proceed. Back in the 1880s, Canada faced circumstances not totally dissimilar to those we face today. National growth was introducing Canadians to new fields of intellectual effort. Canada's traditional industries were in decline: the market in wooden ships had dropped, manufacturing was not export-oriented enough, agriculture was facing serious challenges.

And the same questions I have raised today were being raised then by already uneasy scientists: would human culture and values keep pace with the headlong rush of material progress? This kind of question prompted the Governor-General, the Marquis of Lorne, to call together in 1881 a few dozen of Canada's literary giants and, as he described them, persons "whose achievements may entitle them to lead in science and the useful application of its discoveries." He called upon this illustrious group to form a Royal Society for the Promotion of Literature and Science.

Over the past century, the Royal Society has instructed our nation on the potential of the North; on our higher education needs; our water resources, our depleting fisheries, and more recently on the greenhouse effect and AIDS. The fruit of your wise counsel is evident. It was the Royal Society which urged a young nation to establish our National Museum, to set up the Public Archives, to found a National Library. Had the Royal Society not used its prestige to call for a National Research Council, its establishment may have been delayed. We might not have our National Gallery, or our system of experimental farms. Our National Parks were suggested by the Royal Society.

In its early days, members of the Royal Society commanded much respect from politicians as well as the general public. So much so, that initially, they were given passes by the Minister for Railways and Canals. As Canada's "Parliament of Science", the Society held its meetings in the Railway Committee Room in the Parliament Buildings. It convened in the Senate Chambers to meet with the Governor-General and to report to the nation. Parliament voted it $5,000 a year, a handsome sum in those days.

I do not know just what happened that caused this relationship virtually to disappear over the years. But I want to do something to restore at least part of it.

The Senate Chambers seems to be a very busy place these days, so I cannot invite you to hold your meetings there. But I can tell you that

the Prime Minister and our colleagues in Cabinet have agreed with me that we cannot afford to deprive ourselves any longer of the collective wisdom and collaboration which the Royal Society can offer. They asked me to consult with you as to your needs, and I have done that.

As a result, we have agreed on the justification to provide the Royal Society with suitable accommodations in a central office here in Canada's capital, and to work out guidelines and conditions by which the federal government can make an annual contribution of one million dollars to sustain the Royal Society's operation. We hope that this modest assistance will enable the Royal Society to broaden its program, to gain wider recognition, and to further increase its influence.

We know there is unbounded energy, dedication, talent, and enthusiasm already active in the Royal Society, and perhaps this assistance on behalf of the people of Canada will be a transformational catalyst leading to even greater resources becoming available for your use and to even greater effectiveness in your endeavours to unite scientists and scholars in the service of their country. As Digby McLaren has pointed out, "the future of Canada will depend on how well we succeed in bridging the huge gaps between knowledge and policy, between science and the economy, between technology and political realities."

I shall be very pleased if my assistance has helped to place the Royal Society at the centre of these issues, playing a major part in national leadership and coordination.

I close these remarks in all humility, because I recognize the same truth which the founders of the Royal Society noted in 1882: "Achievements in science equal in force the triumphs of statesmanship. Statesmen labour only for one country while the benefits of science are shared by the world." We need each other - science and government.

I could add the words of Robert Quillam: "Let's make a new world. We have the material and the blueprint ready. Let's not despair - the first one was made out of chaos too."

Publications of the Royal Society of Canada Publications de la Société royale du Canada

Proceedings and Transactions

The *Proceedings* and the *Transactions* appear annually in two separate volumes. Fellows receive copies of the current issues without charge. For current issues the prices to non-Fellows are $6.75 for *Proceedings* and $13.50 for *Transactions*. Some earlier volumes are available for purchase at prices depending on scarcity and condition. Inquiries and orders should be sent to the Royal Society of Canada, P.O. Box 9734, Ottawa, Ontario, Canada K1G 0A0.

Délibérations et Mémoires

Les *Délibérations* et les *Mémoires* paraissent chaque année en deux volumes distincts qui sont distribués gratuitement aux membres. Le grand public peut acheter les dernières livraisons des *Délibérations* à 6,75$ l'exemplaire et les *Mémoires* à 13,50$. Il est encore possible de commander certains volumes antérieurs, le prix dépendant de l'état de la publication et du nombre d'exemplaires disponibles. Prière d'adresser toutes demandes de renseignements ou toutes commandes à la Société royale du Canada, P.O. Box 9734, Ottawa, Ontario, Canada K1G 0A0.

INDEX 1882-1982

The *Index* consists of author and subject entries for all papers published in the *Transactions* and other publications of the Society. Available for $30.

L'*Index* auteurs-matières renvoie ainsi à toutes les communications des *Mémoires* et d'autres publications de la Société. Prix: 30,00$.

Studia Varia

Most volumes are now out of print. Those volumes that are available through the Royal Society are listed below. All others continue to be available through the on-demand publishing programme of University Microfilms, Ann Arbor, Michigan, U.S.A.

La plupart de ces volumes sont épuisés sauf que les titres indiquent ci-dessous qui sont disponibles au Secrétariat de la Société. On peut se procurer les autres volumes en s'adressant à University Microfilms, Ann Arbor, Michigan, U.S.A.

Canadian Population and Northern Colonization, V.W. Bladen, ed., 1962, pp. 168, $4.50

Water Resources of Canada/Ressources hydrauliques, C.E. Dolman, ed., 1967, pp. 249, $8.50

Visages de la civilisation au Canada Français, L. Lamontagne, éd., 1970, pp. 130, SBN 8020-1659-6, $7.50

Le Canada français d'aujourd'hui, L. Lamontagne, éd., 1970, pp. 161, SBN 8020-1658-8, $7.50

Special Publications

Collections of specialized scientific papers on a single theme or related themes have been published for the Society from time to time. Inquiries should be directed to the Secretariat. A list of out-of-print volumes may be obtained from the Society; these volumes are available through the on-demand publishing programme of University Microfilms, Ann Arbor, Michigan, U.S.A.

Publications spéciales

On a publié de temps en temps, pour le compte de la Société, des collections d'ouvrages portant sur un thème unique ou sur des questions connexes. Veuillez adresser toute demande d'information ou toute commande au Secrétariat. On peut obtenir de la Société la liste des volumes épuisés; ces volumes sont disponibles sur demande University Microfilms, Ann Arbor, Michigan, U.S.A..

Soils in Canada, Robert F. Legget, ed., 1961, water damaged copies, pp. 240. ISBN 0-8020-1351-1. $5.50

Marine Distribution, M.J. Dunbar, ed., 1963, pp. 110, $5.00

Studies in Analytical Geochemistry, Denis M. Shaw, ed., 1963, pp. 139, $5.95

Geochronology in Canada, F. Fitz Osborne, ed., 1964, pp. 156, $5.95

Appalachian Tectonics, T.H. Clark, ed., 1967, pp. 99, $6.50

The Earth Sciences in Canada: A Centennial Appraisal and Forecast, E.R.W. Neale, ed., 1968, pp. 259, SBN 8020 15239, $8.50

Glacial Till - An Interdisciplinary Study, Robert F. Legget, ed., 1976, pp. 412. ISBN 0 920064 11 6. $15.00

Energy Flow - Its Biological Dimensions (The IBP in Canada 1964-1974), T.W.M. Cameron and L.W. Billingsley, eds., 1975, pp. 322. ISBN 0 920064 05 1. $5.00

Nuclear Issues in the Canadian Energy Context, E.P.Hincks, ed., 1979, pp. 279. ISBN 0 920064 13 2. $8.00

Nuclear Winter and Associated Effects: A Canadian Appraisal of the Environmental Impact of Nuclear War/L'hiver nucléaire et ses effets connexes, F.K. Hare, A. Forester, eds., 1985, pp. 382. ISBN 0 920064 21 3. $15.00

Proceedings of Symposia / Comptes rendus des colloques

These volumes, consisting of papers presented at symposia held from time to time by the Society, are published, in most cases, as simply as possible to keep costs to a minimum and to ensure rapid publication. The contents in all cases are presented in English or French, depending on the language of the speaker. They are sold by the Secretariat of the Society unless indicated otherwise.

Ces volumes réunissent les communications qui sont présentées aux colloques que la Société organise de temps en temps: aux fins d'en réduire le coût et d'en assurer l'actualité; elles paraissent, la plupart du temps, sous une forme aussi simple que possible, en anglais ou en français, selon la langue utilisée par le conférencier. On peut se les procurer au Secrétariat de la Société sauf cas spécial.

1 *The Tundra Environment*, F. Kenneth Hare, ed., 1970, pp. 54, $2.00
2 *Mercury in Man's Environment*, J.E. Watkin, ed., 1971, pp. 201, $5.00
3 *Communications into the Home/Communications au foyer*, W.C. Brown, ed., 1972, pp. 196, $3.00
4 *Futures Canada/L'avenir du Canada*, J. T. Wilson, ed., 1973, pp. 71, $2.00
5 *Physics and Chemistry of Ice*, F. Whalley, S.J. Jones and L.W. Gold, eds., 1973, pp. 403, $10.00 (Bound/relié)
6 *Energy Resources*, K.J. Laidler, ed., 1973, $10.00
7 *Copernicus*, P. Wyczynski, ed., 1973, pp. 164. Sold by/Vendu par FIDES, $8.00
8 *Waste Recycling and the Environment*, P. Reynolds, ed., 1974, pp. 290, $7.00
9 *Le Rapport Parent, dix ans après*, L.-P. Audet, éd., 1975. Sold by/Vendu par La Maison Bellarmin. $5.00
10 *Frontiers and Limitations of Knowledge/Frontières et limites du savoir*, C. Fortier, d., 1975. $4.00
11 *The Patterns of Amerindian Identity/Les facettes de l'indentité amérindienne*, M.-A. Tremblay, éd., 1976. ISBN 0920064 04 3. Sold by /Vendu par Les Presses de l'Université Laval. $13.50
12 *Problems of Development in Atlantic Canada*, S.D. Clark, ed., 1976, pp. 181. ISBN 0920064 01 9. $5.00

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